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The Annual Oration
ON
THE TREND OF THOUGHT IN RECENT PHARMACOLOGICAL RESEARCH.

Delivered at the Medical Society of London on May 26th, 1913,

BY SIR WILLIAM WHITLA, M.A., M.D., LL.D.,
PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS AT QUEEN'S UNIVERSITY, BELFAST; SENIOR PHYSICIAN, ROYAL VICTORIA HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—In casting my eye over the wide domains of the science and practice of our art in search of a subject to claim your attention for a brief hour to-night the present condition of the field of therapeutics suggested itself.

INTRODUCTION.

In no other department of medicine at the moment is such laborious research manifest or have there ever been more earnest attempts made to utilise every discovery in other branches of science, for the prevention of suffering and for the relief and cure of disease. The triumphs of physics and the advances of synthetic chemistry are being daily pressed into the service of therapeutics, and each addition to our knowledge of pathology, etiology, and diagnosis is valued by the standard of how far it shall be found useful in leading up to a more successful treatment of human maladies. The result of this ceaseless activity has been an advance in the art of healing during the last three or four decades, which is perhaps as great as the progress registered in any corresponding number of centuries.

Whilst the militant army of chemists, bacteriologists, and pathologists was successfully wresting from Nature her treasured secrets when the majority of my present auditors were entering upon their professional studies, the therapeutic battalion seemed to be merely marking time. These were the days when the pessimist and the sceptic, strengthened by the startling revelations of microscopic changes in diseased tissues, and emboldened by the failures of empirics or the visionary seekers after specifics, scoffed loudest at the bare possibility of such results as have been since achieved. This condition of affairs was not without its depressing and retarding effect upon therapeutic progress, so that even the facts accumulated throughout many years of patient clinical observation on the old and well-tried remedies were frequently denied or altogether ignored, because a scientific explanation of their action was not immediately forthcoming.

In the present age of pharmacological activity and discovery, when the air is still ringing with the marvellous results achieved by such agents as thyroid extract, diphtheritic antitoxin, and salvarsan, we have to guard ourselves against the allurements of the opposite evil of credulity. We can, however, always rejoice in the existence amongst us of the honest doubter—one of the best assets of British medicine—for only through honest doubt can we hope to reach the final goal of sure belief—an essential factor in successful therapy. The present seems to me, therefore, a suitable opportunity for pausing and investigating the truth of the more important theories which, like beacon lights, have been guiding pharmacologists in their successful search after new remedial agents. Obviously the brilliant triumphs achieved by operative surgery and Listerism cannot come under our immediate consideration owing to the shortness of the time at my disposal; neither, indeed, is it necessary to speak of them, since they have been ably dealt with by more than one of your recent annual orators.

A RETROSPECT IN THE DOMAIN OF THERAPEUTICS.

On the threshold of such an inquiry we are reminded that very often the advances made in one era are to be traced backwards to their origin in a rational or accidental discovery made at a much earlier date, and sometimes to a research, the importance of which was overlooked at the time. Should such a retrospect in the domain of therapeutics prove successful in elucidating a scientific starting-point to which our present advances can be reasonably attributed, the subject becomes of more than a mere historical or academical interest, since we can confidently hope for further progress so long as research is conducted upon the lines originally laid down or lines directly or indirectly communicating with the main track.

Early Researches on the Action of Methyl-strychnine.

Such a starting-point, I believe, may be found in the epoch-marking researches on the action of methyl-strychnine, conducted by Crum Brown and Fraser in 1868. It was well known that ammonia and its derivatives when administered to animals caused stimulation of the spinal cord and medulla, which ended in convulsions; it was also recognised that the chemical constitution of the vegetable alkaloids corresponded to the type of an ammonia derivative. These experimentalists made the discovery that by linking the organic alkyl radical, methyl (CH_3), to the nitrogen of the complex molecule of strychnine, the resulting comparatively slight change in chemical structure altered in a remarkable manner the physiological or pharmacological action of the alkaloid. The alteration was manifested by a change from the convulsant effect on the cells of the cord to a paralytic one on the terminals of the motor nerves, such as is witnessed in the well-known symptoms of poisoning by curare. This change of physiological action being manifestly due to the transformation of the original tertiary base into a quaternary ammonium compound, it was not to be wondered at that almost identical results were obtained by altering in the same way the chemical constitution or structure of a number of the other alkaloids exercising widely different actions on the human body.

Similar change in physiological action is also obtainable by linking other alkyl radicals, as C_2H_5 instead of CH_3, the radicals being, in each case, previously combined with iodine or bromine. That this change in action is not a mere coincidence or accident is demonstrable in a remarkable manner by the methylation of curare itself—the drug which, in its natural state, affords the most typical example of a paralytic effect upon the motor nerve endings. This substance contains two ammonia bases—the active curarine and the comparatively inert curine. Now, if the latter base be altered by the before-mentioned manipulation with methyl, the transformation in its chemical constitution causes it to become about 230 times more poisonous than before, and the resulting new compound is found to be identical with curarine, the active principle of the drug.

Sir Lauder Brunton, to whom British therapy owes so much, speaking in 1886 of Crum Brown and Fraser's discovery as directing pharmacological advance along a new path, prophesied that another 20 years would not only add greatly to our stock of remedial agents, but to a better knowledge of our patient's condition, ushering in the era when we should be able to ensure the drug action we desired without feeling that our patients often died for lack of knowledge, not on our part but on that of our art. We all feel painfully that such a millennium is still far off, but, nevertheless, we are steadily, if slowly, approaching it. If we interpret Brunton's forecast concerning "our better knowledge of the patient's condition" as implying a clearer conception of the incessant changes taking place in the protoplasm of the body cells, it must be conceded that enormous strides have been made in our progress in this direction, since, during the last quarter of a century, a chemical basis has been industriously constructed, upon which the science of pathology now securely rests—a fact not sufficiently recognised, even by pharmacologists. Therefore in a re-survey of our therapeutic position any examination of the value of the theory concerning the relationship between pharmacological action and chemical constitution must proceed hand in hand with a consideration of the advances made in chemical pathology and physiological chemistry. The truth of the axiom that pathology must constitute the basis of every rational system of therapeutics is more obvious to-day than it was 50 years ago, at which time the study of diseased processes was mainly conducted on morphological lines. If the science of pharmacology is to rest upon the arch of pathology, whose keystone is physiological chemistry, it obviously follows that this foundation must be sufficiently strong and wide to support the growing fabric of all scientific therapy.

The subject of the rerlationship between physiological action and chemical stucture is a most complex and tedious

one for treatment in a solitary address, especially as the high pressure and whirl of professional activities permit few practitioners to cultivate the habit of thinking in chemical language. The nature of our work almost compels us to think out our clinical problems from the physical or vitalistic point of view, hence in my attempt to review the accumulating evidence in favour of accepting the doctrine of a close connexion between the action of a drug and its chemical structure I shall try to avoid as far as possible references to complicated graphic formulæ and the highly technical phraseology of the student of organic chemistry.

It was expected by pharmacologists that Brown and Fraser's discovery would immediately revolutionise the science of therapeutics, but in this they had to realise soon a keen disappointment. The application of a few swiftly constructed generalisations to the solution of intricate therapeutic problems at first only led to failure and chaos, and as always happens a revolt against the new doctrine soon appeared. Even at the present hour some pharmacologists may be seen labouring under the old incubus of trying to explain the action of drugs on the theory of some purely physical or mechanical property in their atoms or molecules, whilst others are falling back hopelessly upon the ancient vitalistic conception. Hence arises the importance of a scrutiny of our present position, since the problem is not one to be decided only in the laboratory but to be finally tested by the practitioner at the bedside.

It is hardly necessary to remind my auditors that in the examination of the theory of the relationship between pharmacological action and chemical constitution we must put aside the question of the mere chemical composition of a drug. It is not the number or nature of the atoms in a compound which we have to think of, but the plan of structure by which these are built up and linked to each other in the drug. In other words, it is not a consideration of the number or nature of the individual bricks or building stones employed, but the manner in which these are grouped together in the molecules of the compound radicals determining the final chemical construction or constitution of the compound. This vital distinction between the structure and composition of a chemical compound is seen in the empiric formula $C_6H_{12}O_4$, which is the label attached to no fewer than 66 compounds—all totally different substances. It is true that a simple change in the mere composition of a salt may change or vary greatly its action, but this will generally be found to be due to some alteration in its solubility which causes retardation of its absorption or acceleration of its elimination. Thus the victim of the malarial parasite can be often speedily rescued from his perilous toxæmia by a moderate dose of the hydrochloride of quinine when he would perish with an enormously larger amount of the insoluble alkaloid or its sulphate lying unabsorbed in his gastric cavity.

Actions of Carbon Compounds.

After the demonstration of the results of methylating the strychnine molecule came the valuable generalisation of Brunton and Cash on the actions of the carbon compounds. These observers pointed out that the two great fundamental groups met with in organic chemistry differed very materially in their pharmacological actions. The substances built up on the open chain plan, the type of which is marsh gas (CH_4) and chloroform ($CHCl_3$), all paralyse the nerve centres and tend to exert an anæsthetic action, whilst the close chain or ring series, represented by the benzene nucleus, produce convulsions or spasms before paralysing. Liebreich, seizing the truth of this common paralytic action of the open chain or fatty series of the carbon compounds, started out in search of a new hypnotic, which ended in the discovery of chloral, as Schmiedeberg likewise gave to therapy the invaluable hypnotic—paraldehyde. When one of the hydrogen atoms in the closed benzene ring is replaced by the radical hydroxyl (HO) phenol is formed, and as each of the other hydrogen atoms is substituted by a further hydroxyl addition, or by methyl, the antiseptic power of the resulting aromatic compound proportionally increases. It was found that by varying the position of hydroxyl in the ring valuable antipyretic qualities could be developed; thus was achieved a notable triumph in therapeutics by advancing from hydroquinone to the synthetical building up of kairin, thallin, and finally of antipyrine.

PRESENT POSITION AS TO CHEMICAL STRUCTURE AND PHYSIOLOGICAL ACTION.

Since then innumerable examples have accumulated equally suggestive of this close relationship, a mere recital of which would occupy the entire time at our disposal, and by their multiplicity would obscure the issues under consideration. It is noteworthy that these examples tell in opposite directions. Not only is the synthetical chemist able, by altering the structure of the molecule, to intensify greatly the action of the compound; but he can, with equal ease, render the poisonous drug inert by introducing into the molecule such acid groups as the sulphuric, sulphonic, and carboxylic. Thus the poisonous phenol is converted into the inert phenyl-sulphuric acid, and morphine-sulphuric acid can be swallowed with impunity in drachm doses. Notwithstanding, however, these accumulating instances of close relationship it must be conceded that it is still impossible for the pharmacologist to foreshadow with absolute certainty the physiological or therapeutical action of a particular untried drug, so that rational must proceed in company with a certain degree of empirical therapy. But the shrewd guesses of a couple of decades ago are now being replaced by the stronger probabilities of later years, and by the almost certainties of 1913. It is often argued by the septic, with an apparent show of reason, that this relationship between chemical structure and pharmacological effect, if it be a definite law, should always afford the certainty of a mathematically correct prophecy. That it does not is due to the fact of our want of knowledge about the construction of the molecules of the highly complex carbon compounds, whose number almost suggests infinity, and of which but a very few comparatively have been studied structurally. Each discovery of the true nature of the graphic formula of these shows that Nature is gradually, if reluctantly, yielding up her secrets to the indefatigable analytical and synthetic chemist, who at once seizes upon the advance as a new stepping-stone from which to approach the creation of an entirely new compound with the almost certainty of obtaining a specific action upon some particular type of body cell or tissue. It is true that unforeseen secondary actions of the newly created drug may vitiate the desired result and prove a barrier to its safe use as a therapeutic agent, but often a further study of its complex molecule suggests a new substitution process by which untoward effects can be eliminated after handing back the compound from the pharmacologist to the synthetical chemist. Another real difficulty in the acceptance of the relationship as a definite law is the operation of the incessant changes, chemical and physical, which are occurring in the blood and cell body, but this difficulty, as already mentioned, is steadily being lessened by the new flood of light thrown on metabolic processes by the physiological chemist.

The few pharmacologists who attempt to belittle the importance or deny the truth of the intimate relationship between drug action and chemical structure because of their adherence to a purely physical or mechanical theory of the *modus operandi* of remedial compounds appear to have overlooked the obvious possibility of the physical character of the molecules being entirely due to the chemical structure of their constituent groups. Thus, it cannot be too clearly realised that should some startling discovery prove the correctness of the old physical theory (though such an event is almost inconceivable), the importance of the relationship as a factor in therapeutic advance would in no way be lessened, especially as it is abundantly recognised that the operation of purely physical laws plays an important part in at least either retarding or facilitating the entrance of the drug to the cells of the tissue upon which it acts.

Let us now for a moment suppose that sufficient instances are not yet forthcoming to justify us in regarding the connexion between chemical constitution and physiological action as a definite "law," but only as a working hypothesis, and let us glance at the results which have accrued to practical therapeutics from its application. No stronger proof could be produced for the demonstration of a truth in medicine or in any other science than the long list of new synthetic antiseptics, antipyretics, analgesics, local anæsthetics, and hypnotics, the discovery or creation of which has owed its origin, not to empiricism, but to the inspiration of a rational therapy founded on the theory of this relationship. Truly

men do not gather grapes of thorns or figs of thistles. If we even set aside the entire series of new remedial agents just mentioned, salvarsan would alone demonstrate the truth of the contention. Ehrlich in the introduction to "The Experimental Chemotherapy of Spirilloses" states that from the very beginning of his medical studies he became possessed with the conviction that "if a connexion between the constitution and the physiological action were granted, this must be pushed further and the tissues must also participate in the distribution, and whereas formerly the substances were offered to the medical man by the chemist for testing purposes, the conditions could now be reversed and the chemotherapeutist could give the chemist points which lead to the desired recovery of genuine curative substances."

CHEMOTHERAPY.

To my mind the question of whether or not Ehrlich has discovered a genuine cure for syphilis sinks into insignificance when contrasted with the importance of the fact that his methods are based upon such a rock-bed of truth as must ultimately revolutionise the treatment of all parasitic diseases by chemical agents. That no single step in his laborious search for a remedy against the spirochæte was taken empirically or at haphazard is evident from his repeated assertion that from start to finish every advance was made in a most purposive manner and only after an exhaustive study of the molecular construction of each of his 606 tested compounds. How far Ehrlich pushed his conviction beyond the theory of mere relationship brings me to the consideration of the second great fundamental principle underlying the conception of a purely chemical basis for all therapy. His term "chemotherapy" implies a great deal more than the acceptance of an established dependence of action on chemical constitution. With this new word another working hypothesis leaps into view, and it is essentially different from the one which we have been considering. The mixing up of these two theories has already threatened a check to therapeutic advance. Stated in its most advanced form, this second theory attempts to explain the action of a drug as the result of a chemical combination of some of its groups with other constituent groups or radicals in the complex molecule of the living protoplasm of the cell or tissue upon which it acts. It must be at once conceded that such chemical reaction can only be proven in a few cases, and therefore cannot be said to rest, as a theory, on the solid basis which must be acknowledged as existing in the case of the established relationship between structure and drug action. Hence it is not surprising to find that some pharmacologists who regard the relationship theory as not incompatible with the older hypotheses of vital, physical, and catalytic actions nevertheless deny the truth or probability of the newer doctrine.

It will repay us to put this working hypothesis of chemical reaction to the same severe test as we have applied to the outcome of Brown and Fraser's discovery in order to examine and determine what part it has played or is playing in therapeutic progress, so that we may judge of its truth by the fruit which it has brought forth. And here let me remind you that the molecular theory upon which the science of chemistry is based is still but a working hypothesis, and probably must remain as such for all time. It has long been known that many drugs suffer a fundamental change between the periods of their absorption and final elimination from the body. The direction of this change, as put by May, is usually in the direction of a transformation of an active or poisonous substance into a less harmful compound, and though it cannot be accepted as proof that the effect of the original drug is due to a chemical reaction between its molecules and those of the living protoplasm on which it acts, it may nevertheless be incidentally mentioned that this knowledge has been put to practical account by suggesting to the synthetic chemist the planning of a new compound on the same type as the transformed eliminated product. In this way, from a study of the behaviour of anilin in the body, phenacetin and other valuable para-amino-phenol derivatives have been added to the therapeutic armamentarium.

The great difficulty of demonstrating the doctrine of a purely chemical basis for pharmacological action rests in our incomplete knowledge of the chemical construction of the living cell protoplasm and of the physico-chemical processes incessantly occurring therein. The puzzling and highly complex constitution of the proteid molecule is gradually being cleared up, and already about a score of its cleft-off building stones have been examined and proved to be of definite chemical composition and constitution, containing strong basic and acid groups capable of combining with each other to form an infinite number of compounds. Though we are still a long way from a synthetical construction of a proteid molecule, the building up of the polypeptids by Emil Fischer strongly encourages the hope that this giant achievement is a possibility in the not far distant future. How vast is the field for such research, and how numerous are the amino-acid groups all capable of combining with each other through their basic and acid radicals may be dimly appreciated by the estimation of the molecular weight of hæmoglobin as 16,669.

EHRLICH'S SIDE-CHAIN THEORY.

On reflection it becomes obvious that the complexity of the construction of the molecule of the cell protoplasm and the almost infinity of its changing groups are in themselves arguments rather in favour of than against the theory of a true chemical reaction between the compound administered and some of the radical groups existing in the cytoplasm. These considerations clear the way for a brief glance at Ehrlich's great side-chain hypothesis or working theory advanced in order to explain the phenomena of the action of the antitoxins of diphtheria and tetanus. It is based entirely upon the chemical conception, and at first view the remarkable fact is obvious that this purely chemical hypothesis was built up to explain the action of the most complex organic compounds known to science in order to elucidate the phenomena of immunisation. It recognises the fact that the toxin molecule contains a large number of complex organic groups or radicals bound together to a central chain or nucleus. Some of these radical groupings possess a chemical affinity for other complex groups existing in the protoplasm of the cells susceptible to the poison. These chemical affinities constitute in the language of Ehrlich the side-chains known as the anchoring groove or haptophore, which combines with a receptor radical in the cell protoplasm, and thus fixes or anchors the toxin molecule to the protoplasmic molecule. The harmful radical in the toxin, being thus fastened in close relationship with a chemical group in the cell, combines with it through its toxophore radical, the chemical reaction accomplishing the injury or death of the cell.

According to this working hypothesis no result will follow the injection of a toxin unless the cells of the organism contain in their molecule a group or radical, known as the receptor, which possesses an affinity for the haptophore or anchoring radical in the toxin as well as a group capable of being injured by the toxophore side-chain of the poison. The phenomenon of natural insusceptibility is thus easily explained since the immune animal contains in its cellular protoplasm no receptors for the fixation of the toxin molecule. Of much more practical importance to the therapeutist is the working out of this hypothesis when applied to the elucidation of acquired insusceptibility or immunisation, and of still greater importance is it in solving the problem of the action of antitoxins in the cure of disease. When doses of the toxin short of producing a fatal result are injected the chemical reactions just described are assumed to have occurred, but the smaller amounts, instead of destroying the cell, only serve to excite it to regenerate its receptors. The cell is also further stimulated to produce more of the chemical receptor substance than is merely required to replace that which has already combined with the toxin, the excess being showered into the blood constituting the antibodies found in the serum. These, therefore, are to be considered as free cell receptors with unsaturated chemical affinities which immediately combine with the haptophore radicals of the toxin, thus effectually preventing them anchoring to the cell protoplasm, without which fixation a toxic effect cannot be produced.

SERUM THERAPY: ITS CHEMICAL BASIS.

At the risk of wearying my auditors I have ventured to give this brief description of the side-chain hypothesis which is often put in such technical language as to obscure its purely chemical application; we shall now glance rapidly at the practical results of serum therapy. This has been during the last few years confused often with vaccine therapy to

the retardation of therapeutic advance. I have used the term "toxin" only in its now scientifically restricted sense as the poisonous product of a true secretion of a bacillus. It is necessary to keep in mind that probably only four pathogenic bacilli really *secrete* a chemical poison. These are the microbes of diphtheria and tetanus, botulismus and pyocyaneus bacilli. The toxins obtainable from castor and croton seeds do not come within our present scope, and the product of Shiga's bacillus is still of doubtful nature. All the other vegetable parasites contain their poisons as an intracellular chemical or endotoxin, which can only operate deleteriously on the tissues after the death and dissolution of the microbe. This fact constitutes the fundamental difference between serum and vaccine therapy. Only toxins lead to the formation of true antibodies in the serum.

Sir Almroth Wright, who never loses an opportunity for demolishing the untenable pretensions of those who apply serum therapy to the treatment of bacterial diseases other than those of diphtheria and tetanus, speaks of the action of the sera for these latter affections as a miracle of successful immunisation—a miracle which gives in a few cubic centimetres a sufficient antitoxin to change the entire course of the patient's disease. When we remember that Behring was able to immunise an animal to such a degree that one-thousandth part of a single drop of its serum was sufficient to neutralise a lethal dose of the chemical toxin, we become able to realise that there is nothing in the whole realm of therapy which rests upon a more secure foundation than the serum treatment of diphtheria and tetanus. The comparative failue of the antitoxin of the latter disease only strengthens the structure upon which the therapy is erected, since by the time the first symptoms of trismus have appeared a chemical combination between the groups of the toxin and the molecule of the cell protoplasm has already taken place. We are even justified in asserting that if we could know the exact moment at which the bacilli of these diseases enter the body, by an immediate resort to the serum a fatal issue would always be averted.

It is necessary to realise the truth of this in order to judge rightly of the value of Ehrlich's hypothesis, which explains, on a purely chemical basis, almost every problem met with in the marvellous processes of active and passive immunisation, notwithstanding the theoretical qualifying views of Arrhenius and Madsen regarding dissociation or the adsorption theory of Bordet and Biltz and the recent experiments of Abderhalden with the polariscope. But even if we assume that the side-chain hypothesis does not assist us in establishing *proof* that the action of the antitoxic serum is of the nature of a true chemical reaction, the following facts must be accepted as conclusive evidence that the result is due to the operation of laws which govern all other chemical reactions: 1. The neutralisation or saturation of the toxin by the antitoxin occurs in the test-tube as well as in the animal body. 2. It is more rapidly effected by mixing together strong solutions than weak ones. 3. It occurs more quickly under warmth and is proportionally retarded by cold. 4. A very marked elevation of temperature always accompanies the reaction *in vitro*, the degree of heat having been accurately measured by Arrhenius and Madsen, who found it to correspond to about half the elevation which follows the neutralisation of a strong acid by an active alkali. 5. It has been proved experimentally that the toxin and antitoxin do not perish, or are not destroyed by the chemical combination; though the former is deprived of its injurious property for the time, it can afterwards be recovered from the solution. 6. The neutralisation of the toxin has been demonstrated to proceed in obedience to the law of constant proportion; that is to say, a given amount of the chemical poison, or multiples of this amount, are always saturated by corresponding multiples of antitoxin—a fact which alone would establish the purely chemical basis of the reaction. 7. If the tetanus toxin be mixed with an emulsion of the brain of a healthy guinea-pig, it becomes innocuous, chemical combination being thus brought about between it and the nerve protoplasm, probably in the exact manner in which this takes place in the living animal after injection of the poison.

These indisputable facts, if they cannot be accepted as proof that all other drug action is the result of a chemical combination between the drug and a compound radical with unsaturated affinities in the protoplasmic molecule of the selective cells, nevertheless must be accepted as going a long way in this direction. That proof is so conclusive in this instance of serum therapy where the chemical structure is so very highly complex is not without significance. (I may incidentally mention that if the result of the action of strychnine be due to a chemical combination between the alkaloid and the cell protoplasm in the spinal cord, this hypothesis should be proven if previous trituration with nerve matter rendered the poison innocuous, as in the tetanus experiment. I regret to state that a long series of experiments, inaugurated by me some years ago, failed to establish this result, the failure being probably due to the alkaloid being prevented in gaining an access to the cellular protoplasm, owing to the cessation of some preliminary physical or chemical process in abeyance in the dead protoplasm.)

PRACTICAL RESULTS: DISCOVERY OF SALVARSAN.

The purpose, however, with which I have set out in these remarks is not so much to heap up examples in support of a purely chemical theory of the action of drugs as to point to the influence of the hypothesis on the most recent trend of therapeutic progress. If we find that by following this conception as a working hypothesis pharmacologists have been able to achieve a notable triumph over disease, we may then safely accept its truth after the manner in which the chemical explorer accepts the molecular theory. In this consideration a study of the evolutionary steps in the side-chain hypothesis affords a considerable degree of interest. It started in Ehrlich's mind on observing the effects of various staining agents on different parts of the animal cell. After studying the chemical structure of the dye molecule he was led by the laws of reasoning to apply his inferences to the explanation of the phenomena of immunisation, and it is a most noteworthy fact that he at first denied the possibility of any similarity between the action of a chemical substance of known composition and of an antitoxin. He was, however, inexorably led by his research work to the conviction that the protoplasmic molecule possessed chemo-receptors which united with the haptophore or anchoring groups in the drug.

Dixon argues with a brilliant *naïveté* that since these hypothetical receptors are obviously distinct from food receptors it is difficult to regard them teleologically as pegs specially designed for the physician on which to hang his drugs. From a consideration of the results achieved it must be conceded that they are pegs strong enough to support the heavy superstructure of chemotherapy, the coping stone of which at present is neosalvarsan. Led first by the truth of the generalisation arising from the research of Crum Brown and Fraser, Ehrlich proceeded on his path of exploration by applying at each step his side-chain hypothesis to the elucidation of the complex reactions occurring in the human body after the injection of various dye stuffs and a host of arsenical compounds, with the result that he was enabled to discover an agent possessing the maximum parasite-destroying power with the minimum of organotropic action. But this was not all; the blending of the solution of two problems which confronted him is to be seen when we examine his final achievement. He had not only to solve the problem of killing the parasite without injuring the patient but he had to cure the disease, which was liable to be aggravated seriously by the rapid disintegration of the slain spirochætæ. In his method we find chemo- and sero-therapy working side by side, the one aiding the other. A dose of salvarsan injected into the veins of a syphilitic mother effects the dissolution of the parasites, whose liberated toxin at once leads to the formation of antibodies in the parental blood; these on being conveyed to the infant in the mammary secretion destroy its myriad spirochætæ or render their propagation impossible, as in the diphtheritic disease, even when no trace of the salvarsan molecule can be detected in the mother's milk.

BINZ'S INVESTIGATIONS ON INFUSORIAL ORGANISMS.

In establishing chemotherapy Ehrlich's aim was to effect a complete sterilisation of the body by a single full dose of the antiparasitic drug without injuring the tissues, a result which he designates the *therapia sterilisans magna*. It is a very remarkable fact that in both this result and in the chemical combination theory which led to its achievement he was forestalled by Binz, of Bonn, in a most important research made in 1867, the year previous to Brown and

Fraser's discovery. Binz, when experimenting on the action of various drugs on the infusorial organisms met with in ordinary hay infusions, discovered that active paramecia were readily destroyed by a 1 in 10,000 solution of quinine, though they withstood the action of enormously stronger solutions of strychnine and other poisons of vegetable origin.

Three momentous conclusions were drawn from this simple experiment. Firstly, that the cause of malaria, which was then unknown or dimly guessed at as a nervous manifestation, would probably be found to be of protozoan nature, since malarial disease was so readily cured by quinine. Secondly, that by administering 15 grs. of the hydrochloride to an average man a solution of twice the strength in the blood necessary to kill amœba was formed, thus fulfilling the ideal of *therapia sterilisans magna* of Ehrlich. Thirdly, at a later period the working hypothesis of true chemotherapy was applied, by which it was inferred that the quinine entered into chemical combination with the protoplasmic molecule of the parasite, whereby it was robbed of its power of absorbing oxygen, and died of asphyxia. Though Binz's work was mainly empirical and not conducted upon the purposive lines of Ehrlich's researches, nevertheless it affords us evidence that he was but dealing with another glimpse of the seamless garment of an eternal truth which will be found ultimately to clothe all drug action as well as every mysterious metabolic process in the living body.

VACCINE THERAPY.

From a consideration of the chemical basis of serum therapy one is naturally led to test the value of this working hypothesis as affording an explanation of the advances made in vaccine therapy by Wright. We shall pass lightly over these brilliant achievements, not because they are of less importance, but because the progress made in this direction does not obviously appear from Wright's first published writings to have been started entirely by the impulse of a chemical theory, as was the case in the more apparently purposive scheme of Ehrlich's researches.

The recent Witwatersrand Report of Sir Almroth Wright on the Treatment of Pneumonia gives no uncertain note about his views on this subject, and forces us to believe that vaccine treatment owes its origin to the conception of a true chemical combination occurring between the remedial vaccine and the bacterial protoplasm. Thus, he states that there is within the human body a laboratory which can, within certain limits, furnish bacteriotropic substances which will enter into destructive chemical combination with any and every variety of bacterial protoplasm without poisoning the tissues or becoming inert in the blood. All immuno-therapy and, in particular, all vaccine therapy has been built up, he says "upon these facts and upon the fact that the chemical machinery which elaborates bacteriotropic substances is set in motion whenever a chemical attack is made upon the tissues by dissolved bacterial protoplasm." He objects to the term chemotherapy being restricted in its application to specific treatment by drugs, since in all cases, both in serum and vaccine treatment, as well as in specific drug therapy, the attack upon the microbes is a *chemical* attack.

A host of workers has already been busy with the test tube and the chemical balance in this department of investigation, guided by the side-chain theory, so that the mysteries of vaccine action and its allied phenomena are being steadily cleared up. But the light let in upon the working of the process flows from the genius of Wright through the discovery of his own peculiar methods of demonstrating the possibility of measuring dosage and results by the opsonic index and other modifications of the phagocytic machinery. The chemical reactions are much more complicated and hence more difficult of demonstration than in the case of the simpler neutralisation of a toxin by its antitoxin, because, as already stated, no true antibodies are produced during vaccine treatment. Nevertheless the serum of an immunised animal will kill the corresponding bacteria when these are added to it *in vitro* though in a distinctly different manner from that by which the diphtheritic and tetanus antitoxin act.

Two substances are required for this destruction of the microbe; one of these, the so-called *immune body*, is produced during the injection treatment, the other, known as the *complement*, exists already in the normal serum and is not elaborated in increased amount by the injections. The side-chain doctrine hypothecates the immune body as possessing two receptors, one of which binds it to the bacterial endotoxin, whilst its second affinity satisfies itself by combining with the complement. The possession of this double affinity of the bacteriolysin is recognised in its name of amboceptor. It must be regarded as an intermediary body which (in the chemical language of Wells), on being added to the bacteria during the process of immunisation, gives to them a chemical affinity for the complement existing already in the blood serum. It is therefore the complement and not the immune body which effects the destruction of the bacteria.

The sceptic may say that this explanation is pure fancy and that chemical laws have nothing to do with the result, but Hektoen has been able to isolate the complement and to prove that it is a definite chemical compound. He has rendered it inactive by causing it to combine with the ions of calcium, magnesia, and sulphuric acid, and Manwaring has succeeded in divorcing it from these ions by a simple chemical reaction. Other investigators have shown that it is a body which, though closely resembling an enzyme and very susceptible to heat, nevertheless combines with the amboceptor, in obedience to the law of definite or multiple proportions which prevails in every true chemical reaction.

HYPERSENSITIVENESS.

The most inscrutable problem arising in serum therapy is the phenomenon of hypersensitiveness which appears on the re-injection of a serum, and causes death when all is apparently going well with the patient. Wolf-Eisner pointed out that the fatal result was due to the operation of a general biological law governing the action of a heterogeneous albumin—viz., that it causes the formation of reactive substances. It is a most noteworthy fact that, quite recently, this hitherto insoluble crux has been brought under the grasp of the chemical working hypothesis in a most unexpected way by Friedberger, who, by mixing quantitative proportions of antigens, antibodies, and complement obtained from healthy serum, was able to liberate the chemical compound which produces the tragic phenomenon of hypersensitiveness.

THE THERAPEUTICS OF BACTERIAL DISEASES.

From these important discoveries which have established a true working theory for serum therapy, vaccination treatment, and hypersensitiveness, we derive faith that the long cherished hope of dealing effectually with all bacterial diseases will be soon realised, especially as it has been abundantly proven that the protoplasmic molecules of nearly all the pathogenic organisms possess receptors capable of combining chemically with various staining reagents. Till quite recently it must be confessed that all the more important advances in therapy left the greater problem of the treatment of the diseases caused by endotoxic microbes untouched. Neither did the triumph of salvarsan aid us directly save by lifting therapeutics out of the old rut of empiricism by demonstrating what could be achieved by the application of rational methods based upon a sound chemical theory.

The fringe of the dark cloud which like a pall had overshadowed the therapeutics of the commoner bacterial affections has recently been lifted by the experimental researches of Morgenroth and his co-workers. Writing of these results, Wright states that "they are destined to stand out as a landmark in the history of pharmaco-therapy because they furnish the first demonstration of the possibility of preventing and curing a bacterial—as distinguished from a protozoal or spirochætal—infection by the administration of a drug." The experiments were made by injecting mice with the pneumococcus, which always proved fatal when untreated. By injecting ethylhydrocupreinhydrochlorate before the inoculation 90 per cent. of the rodents were saved, and in 50 per cent. death was prevented when the salt was injected after infection. These results place the action of Morgenroth's agent in a totally different category from that of any known chemical antiseptic. When tested in the treatment of pneumococcal infections in man, though the new drug was found disappointing and was proved to produce optic disturbances, it affords us every reasonable hope that by proceeding on Ehrlich's rational lines a substitution product will be discovered capable of giving equal or better results than the startling effects on mice suffering from the same microbic infection.

THE NATURE OF ENZYMATIC ACTION.

A grave obstacle to the acceptance of a purely chemical hypothesis of drug action has hitherto existed in what we may term the bogey of catalysis and cell enzymes. Even this, however, has now been removed by the scientific explorer. The most recent researches into the nature of the highly complex chemical structure of the enzymes afford no clue to the plan of their constitution, which remains still a profound secret. All we know about them is derived from a study of their effects. They are to be found in every living cell, and the old view which maintained that all the metabolic phenomena of life were due to the vital activity of the cell is now shifted to the action of enzymes. These, even when intracellular, have in many instances been separated from the living protoplasm though in a state of only comparative purity.

Every known enzyme is undoubtedly in the first instance the product of a living cell, but the same may be said of quinine and strychnine, and the part played by the parent enzyme cell may be conceived by the demonstration of Kobert, who procured chemically active trypsin from the body of a spider preserved for a century and a half in the Nuremberg Museum, as Sehrt discovered active glycolytic ferment in the muscles of a mummy. The researches of Croft Hill and Oswald have proved that the action of enzymes is simply a chemical one, thus the mystery of their behaviour, which a few years ago was regarded as the bulwark of the vitalist argument, has now been demonstrated to be nothing but a series of chemical reactions which are occurring in every cell in the body. The enzyme merely increases the speed of the reaction, which, like other chemical reactions, is reversible, the change occurring from either side of the equation till equilibrium becomes established. In this way, as clearly pointed out by Wells, enzymes not only hasten the splitting up of organic compounds, but they quicken synthesis, though both processes would go on without their presence, only at a much slower rate of progress. He sums up the results of our recent knowledge in the following words: "All metabolism may be considered as a continuous attempt at establishment of equilibrium by enzymes perpetuated by prevention of attainment of actual equilibrium through destruction of some of the participating substances by oxidation or other chemical process, or by the removal from the cell, or entrance into it, of materials which overbalance one side of the equation."

If we could clearly prove that the action of enzymes is to be explained on a purely chemical basis, as has been done in the case of the toxin and antitoxin, it must be conceded that the way to a clearer chemical conception of drug action is opened up. I believe that this has been done, for the following reasons: Though enzymes do not act quantitatively they are, nevertheless, practically identical, pharmacologically, with true toxins, i.e., with those chemical compounds which are the free secretion of bacilli. If a full dose of a sterile enzyme be introduced into the circulation a profound toxæmia, terminating in death, occurs. When a smaller amount is injected and repeated in increasing quantities, immunisation results from the formation of antibodies, which impart an anti-enzymatic property to the blood serum. This serum, when removed from the vessels of the immunised animal, is found to possess the power of neutralising fatal doses of the enzyme injected into another animal, and appears to behave, in every particular, in the same manner as the antitoxin of diphtheria does with its toxin. Moreover, the anti-enzymatic action of the serum is rigidly specific, combining only with its own enzyme, as pointed out by Eisler.

It appears, therefore, impossible to escape the conclusion that the ferment contains a haptophore and toxophore group, which combine chemically with receptors in the molecule of the antiferment. This would probably apply also to the action of specific hormones, to which Dixon tentatively attributes the physiological activity of the tissues. The importance of the acceptance of a chemical theory for the explanation of the action of enzymes affects the science of therapy much less than it does that of physiology and pathology. We realise this when we think of the modern biologist's view that the living cell must be regarded as a coördinated system of ferments, upon whose activities all the phenomena of life depend. Not only are they incessantly breaking down, but they are as continually building up or synthesising new compounds and forming antibodies, whose presence prevents the auto-digestion of the different organs and tissues in the body.

THE RIDDLE OF THE WORLD.

To this broad conception of biological chemistry we might apply a modification of the old Greek's jest—The world is supported by Atlas, Atlas is supported by a tortoise, whilst *Chelonia græca* itself is resting upon fair weather. E. J. Lewis has playfully suggested that the riddle of the world might be better figured by substituting the word enzymes for fair weather, and I would venture to transform the burlesque into a scientific truth by suggesting that the enzymes are now resting finally upon the solid foundations of chemistry, whose laws govern—"Air and ye elements, the eldest birth of Nature's womb, that in quaternion run, perpetual circle multiform; and mix and nourish all things."

THE PART PLAYED BY PHYSICAL FORCES.

Any survey of the potent factors in recent therapeutic advance would be very imperfect without a recognition of those purely physical forces whose fascinating influence is obviously manifesting itself on the mind of every explorer in each of the domains of natural science. I refer to those physical laws whose operations are seen in alterations of surface tension, osmosis, diffusion, dissociation, &c. Our recently acquired knowledge of these forces sometimes proves a veritable *embarras de richesses* to the pharmacologist. Thus one of the latest arguments used for the support of the old physical view of drug action is derived from the study of the *modus operandi* of the hypnotics and narcotics by applying the theory of Hans Meyer and Overton. This postulates that the selective action of a narcotic depends upon its solubility in the brain lipoids, the more powerful members of the group being those least soluble in water and most soluble in fat. Traube's theory also runs on purely physical lines, since he attempts to explain the hypnotic action by assuming a difference of the surface tension, which alters the velocity and direction of the osmosis.

The applications of such theories may with all respect to their supporters be regarded as an illustration of the invisibility of the wood because of the presence of its trees. To the searcher after the truth of things such theories merely explain the entrance of the drug molecule to the cerebral cell protoplasm without affording us any help whatever regarding the way in which the narcotic effect is produced. To obtain this we must fall back on the chemical theory of Baglioni, which assumes that the temporary paralysis of the cerebral cell is due to the withdrawal of its life-giving oxygen since the benzene-phenol compounds in obedience to the law of relationship between physiological activity and chemical constitution exert their hypnotic action in inverse proportion to the amount of oxygen present in their lateral radicals. That such reduction explanation is almost certain to be true is proved experimentally by the fact that ether, chloroform, chloral, and alcohol reduce the oxidising power of living cells. Moreover, the physical theory of Overton and Meyer fails entirely to afford any explanation of the action of the most typical member of the group—alcohol.

The more closely we examine the physical and vitalistic conceptions of drug action the more certain does it appear that behind the operation of physical laws and vital activity chemical reactions are continually taking place which are the real cause of the physical forces being themselves set in motion. Such a statement as this might at first sight appear to be bringing us perilously near to a futile discussion on the origin of life should we venture to define life itself simply as a form of chemical action as some have done. But it is quite another matter to recognise that the original fiat—"Let there be life"—effects its mysterious design through the operation of chemical laws aided by the physical forces which are to be seen in action everywhere around us.

THE MECHANISM OF THE INFLAMMATORY PROCESS.

As I draw these necessarily disjointed generalisations to a close, let me for a brief moment turn from the theories of drug action to a broader arena where we may see in active operation all the forces which are probably also busily engaged in every pharmacological experiment. It will widen our horizon to realise what the application of a chemical hypothesis is doing for the science of pathology,

upon which science only can we hope to build up a rational therapy. I will therefore ask you to glance at a subject which has engaged the attention of every pathological explorer since the advent of Virchow's conception of the cell being the structural unit of the living organism. I refer to the mechanism of inflammation. The most prominent and constant feature observable in the early stage of a local inflammatory process is the remarkable phenomenon of the invasion of the site of inflammation by hosts of leucocytes. Whence they come in such increased numbers into the circulating fluid we need not pause to consider; we are mainly concerned with the fact of their rapid swarming to the seat of injury. Why do they come? Can any explanation be given of their remarkable behaviour in penetrating the capillary walls and migrating far and near into the injured tissues? Whether we accept the earlier views of Metchnikoff and regard them as fighting cells or accept the later view of Baumgarten, which gives to them the position of grave diggers, we long for some light on the way in which they are seen to engulf foreign bodies such as bacteria or fragments of perished tissue.

Those who swallow the doctrine of vitalism have no difficulty in regarding each leucocyte as a sentient and discriminating gourmand who carefully selects and enjoys his food, who occasionally, disdaining the limits of his little reign, breaks bounds voluntarily, and may even seem in so doing to snatch a fearful joy. The scientist, however, explains easily the entire phenomenon in a perfectly rational manner by the application of the biochemical principle known as chemotaxis. It has been demonstrated that certain chemical substances powerfully attract the leucocytes, and these amœboid organisms are seen to be drawn towards them when such compounds are brought anywhere near their zone. It appears to be absolutely certain that the immigration of the white cells into the site of an inflammatory action is determined by a chemical change in the protoplasm of the injured tissue or to the presence of a soluble chemical in its fluid constituents. If anyone doubts that the apparently volitional movements of a leucocyte cannot mostly be explained in this easy manner he has only to resort to the simple experiment of manufacturing for himself an artificial amœba and watching its extraordinary behaviour when various substances are brought into its presence. By placing a single drop of oil of cloves in a small dish partially filled with a mixture of alcohol and glycerine the little bladder of oil floating on the surface will be found in structural and other peculiarities to conform to the type of an amœba, and I have been able to form even vacuolated artificial amœbæ by pouring chloroform into strong perchloride of iron solution.

Rhumbler's clove oil amœba may be made to perform all the puzzling antics of a living leucocyte by gently injecting into the liquid in its immediate vicinity substances which alter the surface tension on one side of the sphere. In this manner it can be made to throw out pseudopodia like a living cell. A chloroform droplet in water can be repeatedly fed by various substances which it will take into its interior. If an insoluble solid, as a particle of quartz, coal, or glass, be coated over with a thin layer of shellac and presented to this artificial amœba it is speedily swallowed, engulfed, or surrounded, and after it has digested or dissolved its resinous envelope the droplet disgorges its indigestible prey. If the lac be offered in the form of a drawn-out thin thread of sealing-wax it will be seen to seize it by its middle and bend it, after which it throws out pseudopodia to the ends of the thread so as to pull the thread within itself by coiling it up in its interior till its solution, or we may say till its digestion, is completed.

The startling life-like osmotic growths of Stéphane Leduc illustrate but another phase of the same phenomenon. These fantastic formations of dead sterilised chemical substances absorb food into their interior, break it up chemically, expel the waste products of the reaction, using only those necessary for their growth. They reject some chemical substances when offered to them and greedily absorb others; they grow up vigorously during their short-lived youth, remain stationary for a time, then die and suffer disintegration like living beings.

These phenomena of chemotaxis and alterations in the surface tension so closely simulate life that many observers have ceased to hesitate to apply their action to the explanation of the behaviour of the leucocytes in the inflammatory area, though Jennings thinks that he sees a fundamental difference in the flow of the fluid contents. Each amœboid leucocyte contains its own coördinated system of enzymes, the ceaseless activity of which is incessantly effecting changes of a chemical nature in the surrounding liquid medium by which the laws of surface tension and chemotaxis are kept in constant action.

It is not only in the mechanism of the inflammatory process that chemotaxis has been shown to play such a prominent part. From the biologist's point of view the crowning or supreme function of the living organism is seen in the phenomenon of reproduction. I need not remind you how Sir John Bland-Sutton, in the fascinating and original Oration of last year, referred to the subject of gametic attraction, in which is witnessed the operation of some powerful and mysterious force by means of which the spermatozoon is drawn towards the passive yelk-laden ovum.* Pfeffer experimentally demonstrated that malic acid strongly attracts the spermatozoids of various ferns when brought within their zone. Now, this substance has been found to be produced within the female sperm cell, and it can hardly be doubted that it is the agent which determines the actual contact of the male with the female elements of the cryptogam. It was to the discovery of this strange phenomenon that we owe the origin of the term chemotaxis—a force which thus plays a leading part, not only at the very inception of the life of the new individual, but all through his prolonged struggle against disease and final dissolution.

When we are thus enabled to realise the prominent part which chemical laws play in the phenomena of inflammation and likewise also in the process of immunisation and of fertilisation, it cannot but aid us in accepting at least the high probability if not the actual proof of the force of such factors operating in all drug action. We then in renewed hope and strong faith can look forward to our arrival at the final goal of a rational therapy by travelling on the guiding lines which the genius of Ehrlich and of Wright has laid down for future research work.

The Oliver-Sharpey Lectures

ON

THE ELECTRICAL ACTION OF THE HUMAN HEART.

Delivered before the Royal College of Physicians of London on April 8th and 10th, 1913,

BY A. D. WALLER, M.D. ABERD., F.R.S.,

DIRECTOR OF THE PHYSIOLOGICAL LABORATORY OF THE UNIVERSITY OF LONDON.

LECTURE II.[1]

Delivered on April 10th.

MR. PRESIDENT AND GENTLEMEN,—My duty as your lecturer has again been interrupted, but not unprofitably, I believe. Dr. George Oliver spent part of yesterday and to-day with me in the laboratory taking observations with this instrument—the oscillograph—of which I intended to have shown you the uses. I shall best do so by describing what we did there in the course of a couple of hours. We took simultaneous records of the electrocardiogram and of the sounds (record shown). Then we took records of the five leads upon the person of Dr. Oliver himself (records shown), from which I will calculate on the blackboard the values of his superior and inferior cardiac angles. And, lastly, we tested—by means of one of the four galvanometers which are included in this oscillograph—an improved form of Dr. Oliver's tambour for estimating arterial blood pressure by means of pulse sounds (records shown). I shall not pursue these matters now; I merely mention them to illustrate what I had intended to develop in these lectures. They show very conclusively the great practical convenience of the apparatus before you, as well as the simplicity with which its data are to be worked out.

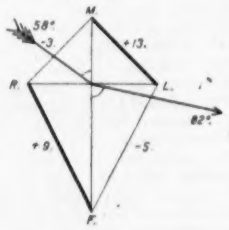
* THE LANCET, May 25th, 1912.

[1] Lecture I. was published in THE LANCET of May 24th, 1913, p. 1435.

SOME CALCULATIONS OF THE ANGLE α.

Here, in the first place, are the records of Dr. Oliver's five leads and on the diagram their magnitudes expressed in 1/10000ths of a volt, from which we are to calculate the value of the angle α above and below the heart. (Fig. 14.) Thus:—

FIG. 14.



$$\text{Above: } \tan\alpha = \frac{13+3}{13-3} = \frac{16}{10} = 1{\cdot}6 \therefore \alpha = 58°.$$

$$\text{Below: } \tan\alpha = 2\frac{9+5}{9-5} = \frac{28}{4} = 7 \therefore \alpha = 82°.$$

Here in the next place are the records of my present laboratory man, Edwards, who presents the classical signs of aortic regurgitation—"Corrigan pulse," diastolic murmur at base, moderate hypertrophy, complete compensation, no urgent symptom. (Fig. 15.)

FIG. 15.

$$\text{Above: } \tan\alpha = \frac{7{\cdot}5-2}{7{\cdot}5+2} = \frac{5{\cdot}5}{9{\cdot}5} = 0{\cdot}58 \therefore \alpha = 30°.$$

$$\text{Below: } \tan\alpha = 2\frac{22{\cdot}5-17{\cdot}5}{22{\cdot}5+17{\cdot}5} = 0{\cdot}25 \therefore \alpha = 14°.$$

The chief difference between these two cases is as regards the left lateral spike; in the case of Dr. Oliver it has a negative value—i.e., is reversed—whereas in that of Edwards it is large and positive. Judging from the directions of the current-axis the two cases belong respectively to the two categories characterised in my first lecture as "*cor breve et molle*" and "*cor longum et durum*." (See p. 1439, Fig. 9.) Now the tendency among clinicians at the present moment is to regard a large left lateral spike as being significant of right-side dilatation, and a reversed left lateral spike as being significant of left-side hypertrophy. Very obviously the comparison of these two cases does not harmonise with this view. It does, however, fall in with the view developed in my last lecture, to the effect that a small or reversed left lateral belongs to the "soft" heart, and a large left lateral to the "hard" heart; and I could refer to many other cases where this view appears probable. Thus in, e.g., my own case the left lateral spike is reversed, and the inferior angle α comes out as 86°, and I take it that my cardiac muscle corresponds with my sedentary life and is a case of the "cor breve et molle." Of my three sons, two live in London and burn the midnight oil, the third lives at Cambridge and spends much time on the river and on the running-path. Of the first two, one (W. W. W.) has a left lateral spike = −1·5 and an angle = 70°; the second (A. G. W.) has a left lateral larger than the right lateral, so that the angle is negative; the third (J. C. W) has a left lateral spike = 7 and an angle = 34°. Here are the data:—

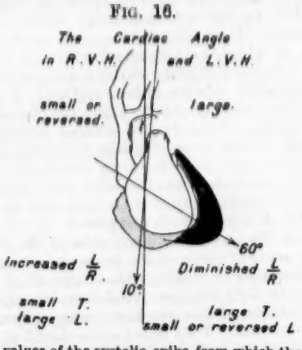
—	Age.	Transverse.	Right.	Left.	α	P.f.	S./Cy. hours per diem.
A.D.W.	56	12	10	−7·5	86°	74	10
A.G.W.	26	5	16	18	−10°	75	9·5
W.W.W.	24	8·5	10	−1·5	70°	80	10
J. C. W.	22	11	14	7	34°	44	6·4

In the case of A. G. W. the left lateral spike is very large, larger than the right, and the angle comes out therefore negative, directed 10° to the right. What the meaning of this may be I cannot say without entering into a long discussion. Obviously it can mean a dilated state of the right side; and as a matter of fact I have witnessed it in cases of mitral stenosis where I had heard a presystolic *intra vitam*, and felt what I took to be a right auricle beating like an aneurysm under the right clavicle immediately before and immediately after each radial pulse (and in one case where I saw a buttonhole mitral, post mortem, and an enormously dilated and hypertrophied right side, April 24th). But I do not think that is the state of heart in the case of A. G. W., nor in that of other of my friends who have exhibited similar electrical relations. In case anyone should prefer to have the relations translated into the current rubric, I may say that what I have just spoken of as a left lateral spike larger than a right lateral corresponds with a relatively large R_{III}, which is commonly regarded as associated with hypertrophy of the right side of the heart.

On the other hand, in my own case, in that of Dr. Oliver, and in that of W. W. W., the left lateral spike is negative—a sign which is commonly regarded as associated with hypertrophy of the left side of the heart. But although I have seen cases of aortic disease that presented this feature—and others that did not—I feel no particular anxiety in the matter. I take it to mean that the muscular tone of the heart is rather below par, or that perhaps there is some left hypertrophy, or that perhaps the arch of the aorta is getting stiffer and I should not attempt to diagnose between these three conditions merely from electrical data.

And here I should say that while I do not accept any strict and exclusive association of a large R_{III} with a right ventricular hypertrophy, and of a small or reversed R_{III} with left ventricular hypertrophy, I do see reason to admit that dilatation to the right must tend to increase the value of the left lateral, while elongation to the left can tend to decrease it, giving in the former case a diminished or actually a reversed angle, and in the latter case an augmented angle up to or even above the horizontal. But in this latter case it is not always easy to be sure of the value of the spike from which the angle is to be calculated.

FIG. 16.



The actual values of the systolic spike from which the angles of the current axis have been calculated in this figure were: R = 8, L = 9 giving α = − 10°, and R = 9, L = 1 giving α = 60°.

It is otherwise difficult to understand how it can have come to pass that so many observers have found large R_{III} with right ventricular hypertrophy and small R_{III} with left ventricular hypertrophy. An explanation of this relation will be gathered from the diagram, and from a consideration of what must be the result if the balance is electrically

weighted by protrusion of the heart to the left or to the right. Protrusion to the left must tilt the current axis away from the vertical and disfavour the left lateral lead. Protrusion to the right must tilt the current axis towards the vertical and favour the left lateral lead. And, of course, in the first case the transverse lead will be favoured and in the second disfavoured—i.e., R_I will be comparatively large in left ventricular hypertrophy, comparatively small in right ventricular hypertrophy.

Intense muscular effort in a normal person causes venous congestion and presumably temporary dilatation of the right side; coincidently with this state I find that the left lateral spike is markedly augmented, implying, of course, a diminution of the inferior angle α (Fig. 16). At the same time the auricular wavelet a is markedly increased, and the $a.$-$v.$ interval is, if anything, rather prolonged.

ANOTHER DEMONSTRATION.

There are two spots of light now reflected upon the screen that indicate the currents occurring at each heart-beat through two galvanometers which form part of the oscillograph. One of the spots answers to the electrical currents of the heart itself led off from a healthy subject by hand and foot. The other spot answers to the sounds of his heart by means of accessory machinery that I shall not attempt to describe. The two spots are now at rest because the two circuits are broken. Closing a first key puts the electrical currents into circuit, and with close scrutiny you can distinguish that with each beat there is a double movement—viz., the first and second ventricular. Closing a second key you see the other spot pulsating, and again scrutinising, you may distinguish a double movement with each beat—viz., the first and second sound. With both keys closed both spots are pulsating, but nobody, I am sure, would undertake to analyse their movements by the closest scrutiny; they must be photographed. The result is a photograph exhibiting the time-relations between V_I and V_{II} of the electrocardiogram and S_I S_{II}, the first and second sounds of the heart. (See p. 1435, Fig. 3.)

AURICULO-VENTRICULAR DISSOCIATION.

At the end of last lecture we were about to consider the clinical features of auriculo-ventricular dissociation—or, as it is termed more commonly with reference to its cause, "heart-block." I do not intend to enter into anatomical or physiological details concerning the auriculo-ventricular bundle, but, assuming that its anatomy is now sufficiently familiar to us all, shall limit myself to the careful consideration of two clinical cases. I have chosen these two cases because they involve discussion of the two chief physiological elements that have been brought into clinical prominence by means of electrical records—viz., the physiology of the auriculo-ventricular bundle and the physiology of the extra-systole. Both of these elements have, indeed, been partially and at great labour disengaged from obscurity by non-electrical means—by the close observation of the older masters before Marey and Chauveau, and since then at the hands of what deserves to be designated as the modern school of cardiology, aided by the methods which we owe to Marey and Chauveau.

And within the limited field of these two cases I shall further limit my attention strictly to their electrical aspect, which, in my opinion, adds definition and certainty to a clinical picture obtainable by other means, perhaps, but obtainable only with great difficulty and with considerable uncertainty.

I have to thank Dr. Halls Dally, of the National Hospital for Diseases of the Heart, for having afforded me the opportunity of studying both these cases. And I wish also to take this opportunity of thanking the authorities of the hospital for the honour they have done me by bringing me into closer association with its regular work. May I add that while as a student of physiology my fixed motive is "the want to know," I am most fully alive to the human side and the human duties connected with a profession of which the first duty is to help and to alleviate even when it cannot cure. And in no class of "cases" does this duty come more forcibly to mind than in cases of heart disease.

The Case of Mr. S. Slow Pulse and A.-V. Dissociation. ? Retrograde A.-V. Conduction.

Age 64. Brief attacks of unconsciousness—"petit mal." A clear and typical case. The pulse counted by watch beats at 36 per minute.

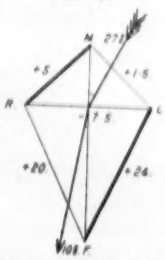
The electrocardiogram (axial) exhibits distinct and independent auricular and ventricular peaks. The ventricle frequency is 36, the auricle frequency 80, the two sets of beats being regular and independent of each other. The contraction of the ventricle is autogenous and not consequent upon that of the auricle. On superficial inspection of the record here given, the gradual lengthening of the $a.$-$v.$ interval in successive beats might be taken to be evidence of progressive $a.$-$v.$ block. But it is merely the accidental result of two independent rhythms of the completely dissociated auricle and ventricle.

The duration of systole and of the cycle is extraordinarily long in correspondence with the low pulse frequency: systole, 0·55 sec.; cycle, 1·68 sec.; the quotient systole-cycle is low—viz., 0·32, giving as the working time of the heart 7·8 hours per diem. Each ventricular contraction, being independent of excitation from the auricle, is an extra-systole.

The distribution of potential over the body is very remarkable. The left lateral and equatorial spikes are larger than the right lateral and axial. The right superior is larger than the left superior. And the transverse is reversed. All these facts indicate that the current axis is directed to the right, and are consonant with a transposed position of the heart. But it was shown by auscultation and percussion that this was not the case; the heart was placed normally tilted to the left, with an enlarged area of dulness to the right of the sternum. The "apex beat" was felt in the sixth intercostal space just within the nipple line.

The electrical effects and the direction of the current axis are consistent with the theory that there is considerable hypertrophy of the right side of the heart. In the transverse

FIG. 17.



Magnitudes of the systolic spike in the five leads of Mr. S.; direction of the current axis determined by calculation of the angle α above and below the heart from these magnitudes.

record the systolic spike is negative, and the auricle appears to be fibrillating. But there is no sign of fibrillation in the records of other leads, which exhibit the typical and unmistakable signs of auriculo-ventricular dissociation with well-marked signs of the auricular contractions. (See Fig. 18, C.)

And upon another occasion it appeared as if the association between auricle and ventricle was closer than normal. An electrocardiogram (transverse) taken at this period exhibits *regularly* two auricular in apparent association with each ventricular contraction. (See Fig. 18, B.) An auricular contraction takes place just before and just after each ventricular contraction; to all appearance the ventricle is aroused in consequence of the first auricular beat, and subsequently arouses a second auricular beat. We might infer from such a sequence that the auriculo-ventricular bridge is capable of conducting excitation in both directions, abnormally from ventricle to auricle as well as normally from auricle to ventricle. In that case the state of the $a.$-$v.$ junction could not be characterised as one of "block"; on the contrary, the passage of excitation would have to be regarded as facilitated.

The interval between the end of the first auricular beat and the beginning of ventricular systole is in this case as nearly as possible 1/10 sec. The interval between the end of ventricular systole and the next auricular beat has as nearly as possible the same value—viz., 1/10 sec., which might be regarded as indicating that excitation travelled with equal rapidity and facility in both directions. But other records taken on the same day exhibit complete $a.$-$v.$ dissociation as exemplified in Fig. 18, D, and it is difficult to conceive that the auriculo-ventricular path can on the same day be "blocked" as well as "facilitated." We must recognise as more probable that this apparent $a.$-$v.$-$a.$ rhythm is an accidental coincidence

between the independent series of beats, where it has happened that the auricular frequency has been precisely double the ventricular. The approximate equality of intervals between successive auricular contractions affords evidence in favour of this presumption. In the record 18 B the interval between successive auricular beats is regularly 0·75 sec., and the ventricular 1·5 sec.—i.e., the respective frequencies are 80 and 40 per minute.

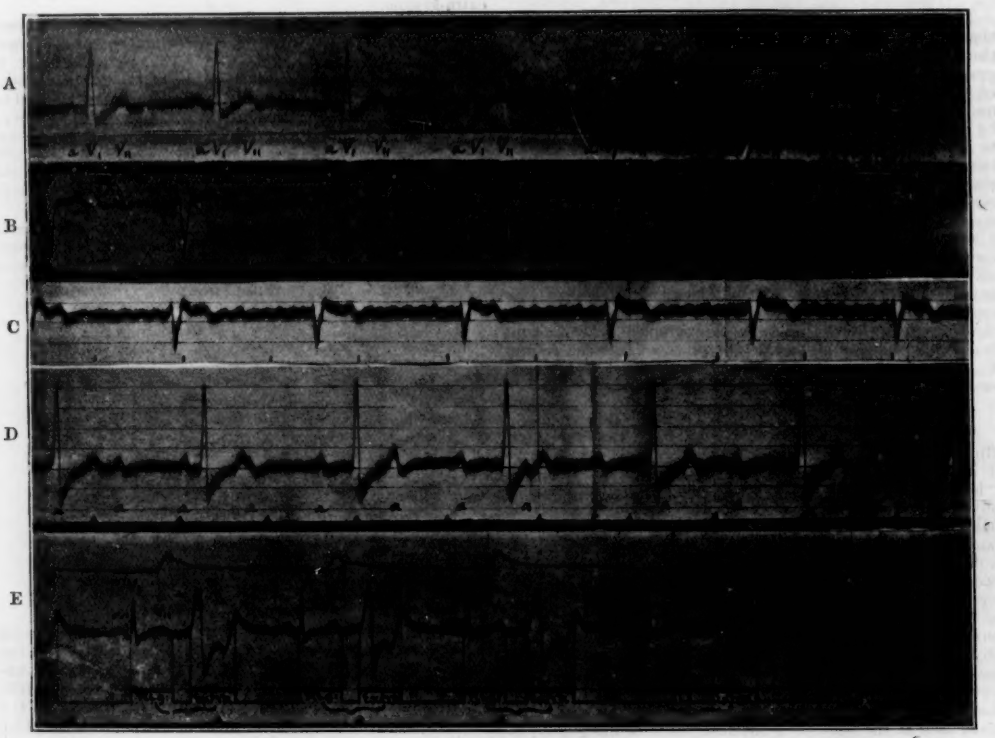
An *a.-v.* interval of a tenth of a second is rather short, but no shorter than might be expected if conduction were "facilitated." The normal length of interval is 0·12 to 0·15 sec., but it can reach to a value of 0·2 sec.; the greatest length I have ever witnessed has been 0·25 sec., and I feel very sceptical of the possibility of the figure 0·4 sec. consistently with preserved *a.-v.* association. the case of Mr. S.—or of 0·15 sec. measuring from the beginning of auricular systole—would signify over-association between the two chambers, but this inference is in contradiction with other evidence to the effect that the case is one of complete dissociation.

On review of the case I regard as more probable that it is one of complete block and dissociation, and that the record exhibiting the apparent association *a.-v.-a.* in Fig. 18, B, is the result of an accidental coincidence between these two independent rhythms.

Cases of auriculo-ventricular dissociation have been described by Chauveau[2] (1885) and by Einthoven[3] (1908), diagnosed in the first case by mechanical, and in the second by electrical means.

In Chauveau's case of J. B. Damiron (*vide* p. 1439, Fig. 10)

FIG 18



A, Normal electrocardiogram—the right lateral lead of A. G. W. B, The case of Mr. S.—transverse lead. ? retrograde auriculo-ventricular conduction. C, The case of Mr. S.—transverse lead. ? Auricular fibrillation. D, The case of Mr. S.—right lateral lead. Complete *a.-v.* dissociation. E, The case of Nancy S.—Cor bigeminum et pulsus infrequens.

Obviously any value of "interval" can appear when auricle and ventricle are beating independently. As a general rule, but not always, the *a.-v.* interval is longer and shorter with longer and shorter systole—i.e., lower and higher pulse frequency—as here tabulated:

	Pulse-frequency.	Length of *a.-v.* interval.
Cat	100 to 180	0·06 to 0·08 sec.
Rabbit	180 ,, 220	0·06 ,, 0·08 ,,
Horse	40 ,, 50	0·20 ,, 0·25 ,,
Man	60 ,, 72	0·12 ,, 0·15 ,,

But exceptions to the rule are frequent in all classes of animals, inclusive of man. Thus after severe exertion in the case of the human subject and in asphyxia in the case of animals, I find the *a.-v.* interval actually prolonged with higher pulse-frequency.

In the case of Mr. S., with a pulse-frequency of 36 per minute and a systole lasting 0·5 sec., we should expect to find an *a.-v.* interval of 0·25 sec. if the two chambers were acting together. The apparent interval of 0·1 sec. only in the rhythm of the auricle was 60 to 65 per minute; that of the ventricle was 21 to 24. A pulse corresponding with the auricular beat could be seen and felt in the external jugular vein. The radial pulse (21 to 24) corresponded with the ventricular contraction. The sounds of the heart were composed of a fundamental rhythm of first and second sounds before and after the radial pulse, and of interpolated sounds corresponding with the auricular rhythm, muffled and indistinct during the diastolic period (open tricuspid), sharp and distinct during the systolic period (closed tricuspid), when the impression of a reduplicated first or second sound was produced according as the interpolated sound happened to occur at the beginning or end of diastole. The patient died suddenly in a train (probably of heart failure). The measurements of the records show at the pulse frequency of 24:—

Systole.	Diastole.	Cycle.	S./Cy.	Hours per diem.
0·5 sec. ...	2·0 sec. ...	2·5 sec. ...	20% ...	4·8 hours.

[2] Chauveau: Archives de Médecine, 1885, p. 161.
[3] Einthoven: Pflüger's Archiv, Band cxxii., 1908, p. 582, Plate 2, Figs. 9 and 10.

In Einthoven's case no details are given, but from the electrocardiograms we can read that the rhythm of the auricle was 80 per minute, that of the ventricle 30. The duration of a cardiac cycle was therefore 2 sec., of which ventricular systole occupied nearly 0·6 sec. The quotient systole/cycle was therefore 0·3, and the working time of the heart 7·2 hours per diem.

The case of Miss D. "Hemitachycardia."

A puzzling yet probably typical case. Age 40. The pulse counted by watch is regular at the frequency 60 per minute. Visible pulsation at the neck, of the same frequency, culminating immediately *after* each radial pulse. With the stethoscope a comparatively loud, sharp first sound is heard preceding the radial pulse, followed by a weak second sound audible just *after* the pulse. But occasionally the heart sounds are of a cantering rhythm, like that of the dactylic metre $-\cup\cup/-\cup\cup$, and at the same time the pulse is irregular, of a limping rhythm like that of the trochaic metre $-\cup/-\cup$. The cantering rhythm can be realised by repeating the word *tegmine*, the limping rhythm by repeating the word *longus*. And as we shall find by study of the electrocardiogram, the correspondence of emphasis between heart-beat and radial pulse in this phase of the case can be represented thus :—

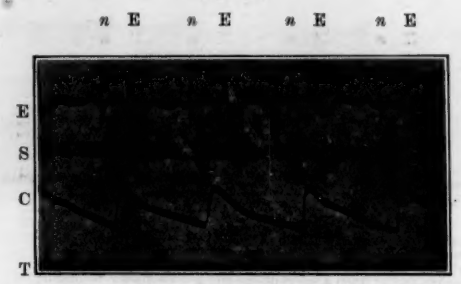
Heart ("cantering") ..... $-\cup\cup$ *tegmine* $-\cup\cup$ *tegmine* .....

Radial ("limping") ..... $-\cup$ *longus* $-\cup$ *longus* .....

Electrocardiograms (axial) taken in these two conditions are at first sight deceptive.

With the pulse beating regularly at 60 per minute, the record (Fig. 19) appears at first to be of ordinary rhythm but anomalous form, comprising auricular, first ventricular, and second ventricular peaks; and this view is at first confirmed by simultaneous records of the sounds and of the carotid pulse. But as will be seen in a moment, this

FIG. 19.



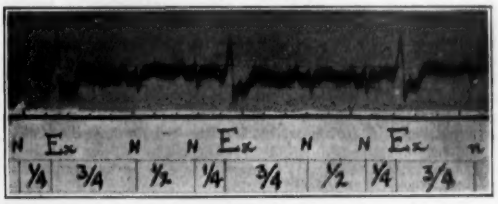
Heart with a "limping" rhythm at 120 per minute. Pulse of regular rhythm at 60 per minute. E, Electrocardiogram. S, Sounds. C, Carotid. T, Time in seconds.

view (which might have been corrected by consideration of the rhythm of the jugular pulse) is incorrect.

During the cantering rhythm (Fig. 20) the record appears at first sight to indicate partial heart-block, with two auricular to one ventricular contraction. But this is not the case.

On comparing the two records, it becomes evident that with the cantering rhythm (Fig. 20) a regular series of normally aroused beats at half-second intervals (i.e., at 120 per minute) is interrupted at every third beat by an extra-systole of ventricular origin, independent of any auricular action. The extra-systole, E, happens prematurely in a cardiac cycle—i.e., the ventricle goes off of itself and too soon, and its contraction is followed by an unduly long pause before the next auriculo-ventricular beat, *n*, takes place, but this natural beat comes just when it is or would have been due if the natural rhythm had not been interfered with by the interpolated systole. The approximate rhythm of the canter is shown below the record. As nearly as possible the interval between two natural beats, *nn*, is 1/2 sec.; the extra-systole occurs nearly 1/4 sec. too soon, and the subsequent natural beat is delayed by nearly 1/4 sec. The first record (Fig. 19) with regular pulse at 60 is now easily read. It exhibits a regularly alternating series of normally aroused beats *n*, and of purely ventricular contractions, E. The heart is beating at 120 per minute with the rhythm of a limping man $n\cup E-n\cup E$, and as nearly as possible the short pause between N and the premature E is 1/3 sec., while the long pause between E and the next *n* is 2/3 sec.—i.e., precisely the normal iambic rhythm that simulates systole-diastole or first sound-second sound $\cup-/\cup-$. Yet in spite of this, and in spite of the fact that the record of the sounds

FIG. 20.



Heart with a "cantering" rhythm at 120 per minute. Pulse regularly irregular, of a "limping" rhythm at 80 per minute. N.B.—When the heart "limps" the radial pulse is regular. (Fig. 19.) When the heart "canters" the radial pulse "limps."

and of the pulse seems to confirm the notion of a heart contracting 60 times per minute, it is clear from the cantering rhythm (Fig. 20), where every third beat is a ventricular extra-systole, that in the limping rhythm (Fig. 19) every second beat is a ventricular extra-systole with a heart beating 120 times per minute. The condition is now, strictly speaking, one of hemitachycardia, with coupled beats and a slow pulse.

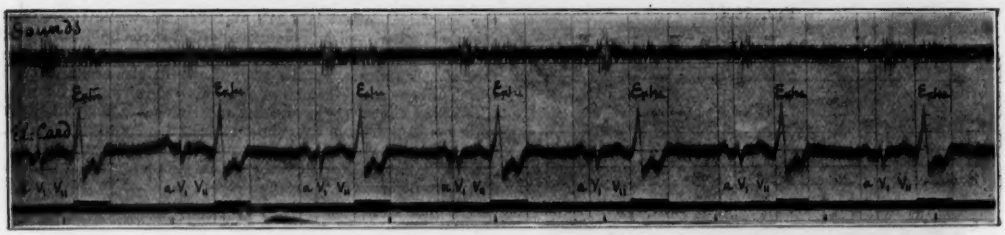
The arterial pulse depends upon the natural beat, *n*, of which the electrical effect is small but typical, while the extra-systole E with its large electrical effect gives no pulse wave. I think this difference in the electrical effects depends on the fact that at the natural systole the ventricles contain blood which acts as an additional derivation to the electrical change, whereas at the extra-systole the ventricles are comparatively empty and therefore less short-circuited. As to the sounds, it is odd but by no means unusual that one sound only should be audible with a beat; in this case the apparent first sound, which is short and sharp, belongs to the natural beat; the apparent second sound, which is longer and less audible, belongs to the extra-systole. As to the jugular pulse, it was noticeable that with the supposed 60 per minute pulse the venous swell was not of presystolic (auricular) nor of systolic (ventricular) but of post-systolic (unintelligible) rhythm. After the electrocardiogram had been taken it became, of course, obvious that the jugular pulse belonged to the extra-systole. I understand a jugular pulse of this rhythm to signify that in the premature contraction of the ventricles the right ventricle drove back upon the veins through a not yet closed tricuspid orifice. This view was confirmed by feeling the deep pulsation at the root of the neck just below the right clavicle. A double impulse was there palpable, preceding and succeeding the radial pulse, the interval between its two parts being less than 1/2 sec., more than 1/4 sec.—i.e., approximately 1/3 sec., and simulating a systolic-diastolic rhythm. The second as well as the first part of this double impulse was palpably an impulse of high tension. The first part preceding the radial pulse was presumably the arterial pulse of the subclavian. The second part succeeding the radial pulse belonged to the extra-systole, and could not be arterial, inasmuch as it gave no pulse in the radial. It was necessarily venous, and its palpably high tension signified that the tricuspid orifice was open when the ventricle was contracting; during the extra-systole the right auricle was practically an aneurysm of the right ventricle. To some extent this can also have happened with the normal systole.

A year later Miss D. looks and feels "much better," but the hemitachycardiac *régime* is now fully established. The pulse is perfectly steady at 45 per minute. "First" and "second" sounds of corresponding rhythm are plainly audible, the pulse corresponding with the first sound and

being apparently dicrotic. The simulation of an ordinary slow heart and pulse is complete. But on carefully timing the pulsation visible in the external jugular vein this can be distinctly seen to follow the radial—i.e., to be apparently diastolic and synchronous with an apparently diastolic throb felt over the præcordium and above the right clavicle. The electrocardiogram shows beyond any doubt that each cardiac event is double. The first half of the double beat is a complete beat of normal type, a V_I V_{II}, the second half is an extra-systole. Simultaneous records (1) of the electrocardiogram and of the sounds (Figs. 21 and 22) and (2) of the electrocardiogram and of the arterial pulse, place the matter beyond all possible doubt. It may be mentioned, however, that even with this electrocardiogram a reader unfamiliar with such records might at first sight misinterpret it and take the extra-systole for a ventricular event and the previous complete beat for its auricular precursor. This reading is, of course, excluded by reference to the time of the brachial beat—viz., 0·13 to 0·15 sec. later than the ventricular spike V_I; moreover, it would imply an a.-v. interval of an impossible length—nearly half a second.

FIG. 21.

FIG. 22.



Miss D——, a year later; hemitachycardia fully established. Fig. 21, simultaneous electrocardiogram (R. lateral) and pulse of brachial artery. Delay = 0·13 to 0·15 sec. Fig. 22, simultaneous electrocardiogram and heart sounds. Apparently two sounds, one immediately after the beginning of the normal systole at V_I, the other immediately after the beginning of the extrasystole at E. (The arterial pulse in the brachial artery is recorded by a Chauveau sphygmoscope acting upon a microphone and galvanometer belonging to the oscillograph; the "lost time" of the apparatus is less than 0·01 sec. After the record had been taken the prolonged pulse could be well appreciated by simple palpation, and the notch corresponding with the extrasystole could be felt. This notch is presumably due to a remission of arterial pressure produced when the extrasystole just raised the closed aortic valves.)

I have given this case with some minuteness chiefly as an instance of the use of the electrical method in furtherance of exact diagnosis, but also because I believe it to represent a not uncommon class. The diagnosis, apart from its physiological interest, is of moment as regards prognosis and as regards treatment, since it is of primary importance to recognise whether we have to deal with a depression or with an intensification of cardiac excitability.

It is difficult in this case to arrive at any exact estimate of the systole/cycle quotient. Taking an average series of several beats, it is something like 47·5 per 100, or 11·4 hours per day. Nor is it possible to estimate the angle a from the right and left lateral natural beats where the spike is too small for measurement. Taking the right and left extra-systole spikes we have $\tan a = 2\frac{10-6}{10+6} = \frac{8}{16} = 0{\cdot}5$ $\therefore a = 27°$.

Other Cases of Similar Type.

Judging from my own very limited clinical experience, this somewhat puzzling case is not an isolated curiosity, but representative of a type of not infrequent occurrence. A limping rhythm, in which alternately short and long pauses occur, the long being nearly double the short pause, appears to be a not uncommon type, and by reason of the low pulse-frequency can easily be mistaken for a slow heart.

I have met with one other such case during the last year (of which, however, I did not obtain an opportunity of taking a record) where the pulse by watch was 48 per minute, and the impulse on palpation alternately weak, strong-weak-strong, i.e., of a limping rhythm. The pulse timed with reference to the impulse could be distinctly felt succeeding the weak impulse and preceding the strong impulse—i.e., during the short pause between the two impulses. I concluded in that case that the heart was beating at the frequency 48 × 2, by coupled beats of which the first, apparently the weaker, was alone effective and gave a radial pulse.

I recollect a third case, quite unintelligible to me at the time, of which I took a mechanical record in 1880 in the course of observations on the rapidity of propagation of the pulse wave. I have unfortunately lost the record, but can very nearly reproduce it from memory, inclusive of its time relations, from which it is easy to recover the pulse-frequency. The duration of systole was exactly 1/3 sec., that of the cycle exactly 1 sec., and the radial pulse occurred exactly half-way between the beginning and the end of systole, from which I estimated at the time that the pulse-delay was 0·17 sec.—i.e., normal. I recollect, as if the case had occurred yesterday, my surprise at finding the radial pulse-delay normal, and the more forcible impulse diastolic (as I then thought) instead of systolic. I could not then understand the mechanism of such a diastolic thump otherwise than in association with aortic disease. I am now persuaded that the case was similar to that of Miss D., and that with the radial pulse at 60 the heart was beating at 120, at the limping rhythm of $n \cup E - n \cup E$, the long interval being just double the short interval. On auscultation three sounds were audible, and I thought that this was due to a reduplication of the first sound. The case is that referred to in a paper on the arterial pulse-wave,[4] but all that I find noted there is: "Chronic nephritis. Reduplicated first sound; femoral pulse-delay = 0·17" at the pulse-frequency 60."

The record of a fourth similar case is given by Einthoven

[4] Journal of Physiology, vol. iii., 1880, p. 47.

in Fig. 30 of "Le Télécardiogramme." In this case the rhythm is again of a limping character, n ∪ E — n ∪ E, with the short interval between n and E nearly half the length of the long interval between E and n. And it is interesting to notice that this 1 to 2 relation occurs at the low pulse-frequency of 40, with the heart-frequency at 80.

It appears probable that it was the observation of cases of this type that induced von Leyden to form his well-known theory of hemisystole. A double shock with distinct sounds, the first shock alone being followed by a radial pulse, are the main points of von Leyden's clinical picture, to which he adds that an obvious jugular pulse occurs after the arterial pulse—i.e., with the second shock—agreeably with his theory that the first shock is by contraction of the left ventricle, the second by the right ventricle.

I am convinced that the cases I have seen have not been due to any hemisystole of this type, and I am certain from the electrocardiogram in the case of Miss D. that the double beat has been due to an alternation between effective and abortive beats of the whole ventricular mass, the first contraction of each couple aroused normally, and the second contraction of the couple arising abnormally and prematurely.

Von Leyden first published his theory of hemisystole in 1868.[5] He upheld it vigorously as recently as in 1903,[6] but his theory must be regarded as finally disproved by the counter-arguments of H. E. Hering and of Riegel[7] to the effect that the beats were paired or bigeminal beats, where the second or extra beat failed to give any pulse. This bigeminal character is well known in association with digitalis poisoning.[8]

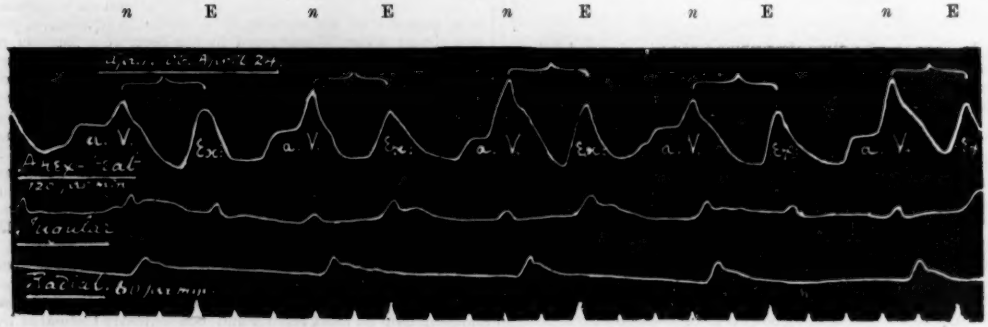
My belief in the common occurrence of cases of the type of Miss D.'s, in which an apparently slow pulse of 50 is associated with a heart beat of double that frequency, and a jugular pulse immediately *after* the radial pulse, has been fully confirmed by a visit to the Hospital for Diseases of the Heart, where out of ten picked cases shown to me by Dr. Russell Wells I was able to detect no less than *three* presenting the syndrome with typical clearness. In all three cases it was easy to demonstrate without the use of any apparatus that an apparently weaker systolic impulse was followed by an apparently stronger "diastolic" thump, that the radial pulse succeeded the former and preceded the latter, and that the plainly visible jugular pulse also succeeded the radial pulse, being synchronous with the strong "diastolic" thump, which, however, I may say at once was in reality an extra-systole immediately following each normal systole. Dr. Wells concurred in this interpretation of all three cases; upon one of them, indeed, he had already taken an electrocardiogram clearly demonstrating the alternation of normal and abnormal systole. (Fig. 18, E, the case of Nancy S.)

In the other two cases apparatus was not available for taking an electrocardiogram, but with the assistance of Dr. Eckenstein I obtained mechanical records of the apex-beat, jugular vein, and radial artery of one of them which indicate sufficiently well the facts described—viz., double heart-beat, double jugular pulse to each radial pulse (Fig. 26, Mrs. A. H.). The jugular pulse was obviously and palpably ventricular; a greatly dilated auricle could be felt pulsating like an aneurysm under the right clavicle. (This patient died on April 23rd; the heart weighed 22 oz., hypertrophy of right ventricle, of which the wall was nearly as thick as that of the left ventricle; greatly dilated auricles; tricuspid orifice admits four fingers; mitral orifice does not admit the forefinger.)

The working time of the heart in two of these cases, estimated as the relation of duration of ventricular systole to duration of systole + diastole, was very high—i.e., 60 per 100 or 14·4 hours per 24. Both cases have terminated fatally, but I should not wish to generalise from this as regards the prognosis of other cases.

Cases of this class present coupled beats, of which the first is a normally aroused auriculo-ventricular event, the second an abnormally arising ventricular contraction. Their principal clinical interest in my view consists in the palpable relation between the second beat and the jugular pulse. In all of the last three cases the jugular pulse was plainly seen and felt to accompany the second beat, and was therefore probably ventricular; in two of the three cases no arterial pulse could be felt with the second beat; in the case of Nancy S. a weak second pulse attributable to the second beat could be felt, the impression received being that of a slow dicrotic pulse at 50 per minute. But that the apparent dicrotism was in reality an expression of the coupled beats is evident from the consideration that a true dicrotic wave could not be produced in the arterial system at such a rhythm. In the case of Mrs. A. H. no second pulse could be felt in the radial artery.

FIG. 23.



The case of Mrs. A. H. Simultaneous record of apex-beat. (Coupled beats each composed of a normal event, aV, and of an extra-systole, Ex., and of the jugular pulse showing at each event a distinct pulsation before and after the radial pulse, which follows the normal event at the usual interval of nearly 1/5th sec.).

Stages in the Development of Cardiac Irregularity.

The state of the heart in which extra-systole appears is one of increased irritability (whether neural or muscular or neuro-muscular matters little); in slight degree such increase leads to an occasional extra-systole; in extreme degree to a storm of extra-systoles constituting an attack of tachycardia. In this intermediate half-and-half condition, characterised by a slow pulse and a quick heart and an alternation of radial and of jugular pulse, we have what I have ventured to designate as a condition of hemitachycardia.

In its pure and most typical form hemitachycardia presents the following features: (1) an infrequent (radial) pulse; (2) a double præcordial impulse preceding and succeeding the radial pulse; (3) a double jugular pulse corresponding with the double cardiac impulse; (4) the unmistakable electrocardiogram of coupled beats.

An interpolated beat or extra-systole is more readily recognised by electrical than by any other means, although it can be recognised without the use of electrical apparatus, and actually was recognised long before the electrical effects of the heart were discovered. It may be no more than a rare and occasional occurrence in the otherwise regular beating of the normal heart. When it occurs more frequently it attracts attention as a flutter or stumble

[5] Virchow's Archiv, vol. xliv., p. 365.
[6] Deutsche Medizinische Wochenschrift, 1903, p. 361.
[7] Ibid., pp. 381 and 795.
[8] Boehm: Pflüger's Archiv, vol. v., 1872, p. 187.

—as Bouillaud called it, "un faux pas du cœur"—and can then be caught and studied on a recording surface. When it is still more frequent it becomes a regular irregularity, and the heart never goes on for many beats without a stumble, which at the præcordium is a throb, at the radial artery a weak or missing pulse. This can eventually occur for periods with clock-like regularity; if every third beat is an extra-systole we have a cantering heart and a limping pulse; with every other beat replaced by an extra-systole we have a limping heart and a regular slow pulse. And in this stage the common clinical features can be peculiarly deceptive, for the false beat can be not quite ineffective, it may just open the aortic orifice and give a feeble wave palpable in the carotid, perhaps even in the radial, and then the rhythm is such that the pulse feels like a slow and dicrotic pulse. Finally, the intruding beats may altogether oust the normal beats. Hemitachycardia in which every other beat is premature can pass into complete tachycardia in which every beat is premature. All the beats are now false beats, and yet they can drive the blood round its circle. And if the normal government of the heart is not restored, this false action of its muscle begins in turn to fail. The false beats become alternately strong and weak or hopelessly irregular, and in the end the muscular elements struggle incoherently.

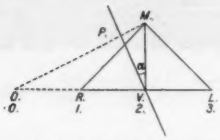
The successive steps of the degradation are: (1) An occasional stumble; (2) a frequent stumble; (3) a regular stumble; (4) hemitachycardia, pulsus bigeminus vel infrequens; (5) tachycardia, pulsus frequens; (6) pulsus alternans vel irregularis perpetuus; (7) delirium cordis—asystole—exitus letalis.

NOTES.

1. *Formula for the calculation of the superior and inferior angles formed with the vertical by the current axis of the heart.*—In a paper communicated to the Royal Society (March 6th, 1913) the formal proof of the formula $\tan \alpha = \text{Cot } \frac{1}{2}$ (M or F) $\frac{R-L}{R+L}$ has been given. To complete the present exposition the proof is transcribed in this note.

In the triangle M R L, the sides M R, M L indicate the right and left superior leads, M being the mouth, R the right hand, L the left hand. Actually in relation to the

FIG. 24.



heart, these leading points are to be regarded as sections through the neck and shoulders, and for convenience of calculation we shall take the angle at M = 90°, so that $M V = \frac{1}{2} R L = R V$. Taking, e.g., the right hand spike = 1 and the left hand spike = 3 we have at M the potential = O, at R the potential = 1, at L the potential = 3. Projecting the potential of M on to the horizontal line L R produced to O, and taking the position of the point O such that the length O R shall represent the potential difference between M and R, and O L the potential difference between M and L, we have M O as the line of zero potential. A line V P, drawn perpendicular to this zero line M O, gives the position of the current axis, forming with the vertical M V an angle, which call α.

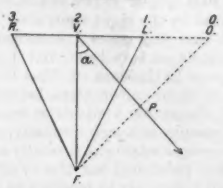
The angle $M O V = \alpha$; $\tan \alpha = \tan M O V = \frac{M V}{O V} = \frac{1}{2} = 0{\cdot}5$ ∴ $\alpha = 26°36'$.

Or otherwise: since $M V = \frac{1}{2} L - R$ and $O V = \frac{1}{2} L + R$, we may write: $\tan \alpha = \frac{L-R}{L+R}$, or in words: the required angle α is an angle having for its tangent the fraction of which the numerator is the *difference* between the spike of the strong lead and that of the weak lead, and the denominator their *sum*.

The formula holds good for negative values of the weak lead, as can easily be shown by a geometrical construction. But an example will be sufficient. Let − 1 be the value observed by the weak lead R, and + 3 that for the strong lead L, $\tan \alpha = \frac{L-R}{L+R} = \frac{3+1}{3-1} = 2$, ∴ $\alpha = 64°$.

In the figure representing the inferior triangle the length V F has been taken as equal to the length R L—i.e., twice R V. The formula now runs: $\tan \alpha = 2 \frac{R-L}{R+L}$, where R and L stand for the magnitudes of the systolic spikes of the right lateral and left lateral leads respectively. As in the previous case, we have $\tan \alpha$ = the difference R − L divided by the sum R + L and multiplied by $\frac{F V}{R V}$, the cotangent of $\frac{1}{2}$ the angle R F L. For the superior triangle we took $\frac{M V}{R V} = 1$, for the inferior angle we take $\frac{F V}{R V} = 2$. (Fig. 25.)

FIG. 25.



2. *The duration of ventricular systole; working time of the heart.*—Allusion was made in the course of these lectures to the "working time of the heart," but no development of the matter was entered upon.

The duration of ventricular systole can be estimated from apex-beat cardiograms; the fraction $\frac{\text{Duration of systole}}{\text{Duration of cycle}}$ is a measure of the working time of the heart, i.e., of the ventricles; it can be expressed in the form of a fraction or as hours per diem. Normally this fraction is $\frac{1}{3}$, or 8 hours per diem; it varies with pulse-frequency and other conditions between the limits of $\frac{1}{4}$ to $\frac{1}{2}$, or 6 to 12 hours, and I am accustomed to take this length into account in forming an estimate of the working capacity of the heart, and to say that an average heart with moderate reserve power is a 9 hour heart, while an 8 hour heart has more than average reserve power and has a large margin, and a 10 hour heart gets through its work but has little reserve. A heart with a systole/cycle quotient above $\frac{1}{2}$—i.e., a 12 hour heart—is in my view an inadequate heart.

A diagram and table of the values of the quotient at different pulse frequencies are given at p. 54 of my "Introduction to Human Physiology" (third edition, 1896). The quotient can be most readily and conveniently estimated by means of the electrocardiogram, the values thus obtained being practically identical with those obtained from apex-beat records. The systole is to be measured from the beginning of the first ventricular V_1 to the end of the second ventricular V_{11}; the cycle is, of course, the interval between any two successive spikes V_1.

I intend to take an early opportunity of describing the

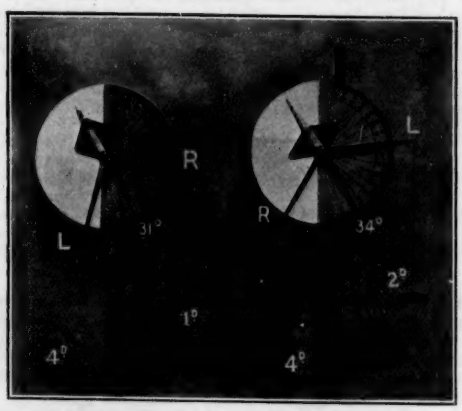
—	Pulse frequency per min.	Duration of systole.	Duration of diastole.	Duration of cardiac cycle.	Systole/cycle.	Hours per diem.
					%	
Typical values	(75)	(0·3)	(0·5)	0·8)	(37·5)	(9)
B. O. B. (normal)	60	0·38	0·62	1·00	38·0	9·1
A. D. W. (normal)	74	0·34	0·47	0·81	42·0	10·0
J. C. W. (normal), long-distance runner	48	0·37	0·88	1·25	29·0	7·1
The same after slight exercise	63	0·35	0·60	0·95	37·0	8·8
G. E. (slight aortic reflux and hypertrophy; no symptoms; perfect compensation) ...	69	0·34	0·52	0·86	39·0	9·2
The same	60	0·37	0·63	1·00	37·0	8·9
Dr. A. (normal)...	73	0·30	0·52	0·82	36·0	8·6
Mrs. R. (mitral stenosis; auricular hypertrophy) ...	107	0·31	0·25	0·56	55·0	13·2
Mr. S. (bradycardia; *a.v.* dissociation)	36	0·55	1·14	1·68	32·0	7·8
M. N.	67	0·36	0·54	0·90	40·0	9·6
The same after short run ...	103	0·28	0·30	0·58	48·0	10·6

value of this indication and its limitations; meanwhile the principle involved can be exemplified by the above

list of measurements taken almost at random from my note-books.

4. *Mechanical representation of tan* $\alpha = \frac{L-R}{L+R}$ *and of tan* $\alpha = 2\,\frac{R-L}{R+L}$.—The electrocardiac goniometer referred to in the first lecture (p. 1437)—or as it is called in the laboratory, the penny balance (Fig. 26)—is a lecture-table apparatus

FIG. 26.



The "penny balance."

that serves to illustrate mechanically by weights the principle upon which the calculation of the cardiac angle is effected from the magnitudes of the right and left hand systolic spikes.

To represent the right and left superior leads the two arms of the beam are at right angles. To represent the right and left lateral leads they are at the angle of 127°—i.e., 180 – 53, 53 being the angle of which half the cotangent = 2).

As represented in the figure, the former beam carries on the L. scale-pan a weight of 4*d.*, on the R. scale-pan a weight of 1*d.*, and the index points to the angle 31° ($\tan\alpha = \frac{4-1}{4+1} = \frac{3}{5}$. $\therefore \alpha = 31°$).

The second beam carries on the R. scale-pan a weight of 4*d.*, on the L. scale-pan a weight of 2*d.*, and the index points to the angle 34° ($\tan\alpha = 2\frac{4-2}{4+2} = \frac{4}{6}$. $\therefore \alpha = 34°$).

For the purpose of demonstration the weight of the scale-pans is small and negligible, and pennies of approximately equal weight are used as convenient units. But suitably constructed and with proper weights, the model serves as a calculating machine from which α can be read directly on the scale. Negative values of the left lateral and right superior spikes must then be imitated by weights pulling upwards round frictionless pulleys.

ERRATUM.—In the first Oliver-Sharpey lecture published last week the word "weighing" on p. 1437, column 2, line 3, should be "weighting."

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce for publication a translation by Dr. Léon Blance and Dr. H. de Méric into English of Dr. Albert Robin's "Treatment of Tuberculosis." The same publishers will shortly publish an English translation of the Italian work, "A Treatise on General and Industrial Organic Chemistry," by Dr. Ettore Molinari. The translation has been carried out by Mr. T. H. Pope, of the University of Birmingham. The text contains 500 illustrations. They will also publish a new and revised edition (sixth) of "Surgical Pathology," by Sir Anthony A. Bowlby and Dr. F. W. Andrewes.

PRIMARY EPITHELIOMA OF THE NIPPLE IN A GIRL AGED ELEVEN.

BY WILLIAM HENRY BATTLE, F.R.C.S. ENG.,
SURGEON TO ST. THOMAS'S HOSPITAL;
AND
B. C. MAYBURY, M.B., B.S. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,
SURGICAL REGISTRAR, ST. THOMAS'S HOSPITAL.

MALIGNANT disease of the nipple as a primary affection is very rare at any period of life, and is unknown at the age of the patient whose case is here recorded; even later in life, when carcinoma of the breast is common, the nipple rarely becomes involved other than by extension from the breast. During a period of 30 years, 1880–1909 inclusive, only two cases of carcinoma of the nipple were admitted to St. Thomas's Hospital out of many cases of malignant disease in the female; neither of these was squamous-celled. In one the growth was recurrent after removal elsewhere three years previously, and the patient was aged between 40 and 50; in the other the growth was spheroidal-celled, but clearly defined, and was removed locally without amputation of the breast. This was in a woman 69 years of age, and the glands were not affected.

The disease which is most likely to be mistaken for it is primary chancre. Quite recently a case was under observation in which a hard, painless, ulcerated, irregular sore was presented with enlargement of the axillary glands. The patient had been in charge of a grandchild suffering from snuffles, and had placed him to the left breast in order to quiet him. The appearance of a secondary rash on the body made the diagnosis clear

With the exception of two cases of cancer of the nipple which are recorded by Dr. K. Morris,[1] we can find no others in surgical literature. There are, however, several cases of cancer of the breast described in French publications, as having been seen in female animals.

Of all forms of carcinoma the squamous-celled variety is probably the most rarely seen in children; the only case occurring under 20 amongst the patients admitted to St. Thomas's Hospital, 1880-1909, was that of a boy, of which the following is an abstract from the reports: "Male, aged 14, admitted with indurated swelling in upper lip extending to nasal septum, commenced 6 years before as a 'wart,' slow extension; 4½ years before admission growth removed at provincial hospital. Recurrence 1 year later; slow increase since. Appearances closely resembled rhinoscleroma, but growth removed showed typical carcinoma structure." It was too extensive for successful removal and proved fatal in a few weeks.

Cancer of the breast is undoubtedly a disease of later life, and it is uncommon under the age of 20 years. In 1879 Gross[2] stated that he had only seen one patient with this disease under 30 years of age in his own practice; but since then many have been recorded between 20 and 30, whilst there are not a few accounts published of manifestation of the disease before the age of 20.

Jopson,[3] Speese, and White, writing of tumours of the breast in childhood, say it is doubtful if there is any authentic case of carcinoma of the breast before the age of 16 years. Hertzman[4] described a case of colloid carcinoma of a supernumerary gland in a girl aged 17. Herman,[5] in a collection of 2713, found no less than seven under the age of 20, and four of these were under 16. Dr. Brewer[6] met with one case at the age of 13, and W. H. Thomson[7] at the age of 11, but this was an adeno-carcinoma, which developed in a breast that had been enlarged for three years and had increased more rapidly after injury. If we take the reports of the surgical side of St. Thomas's Hospital from 1880–1909 and divide the periods into three, we find that from 1880 to 1889, inclusive, there were 310 women admitted for primary carcinoma of the breast, and only three of them

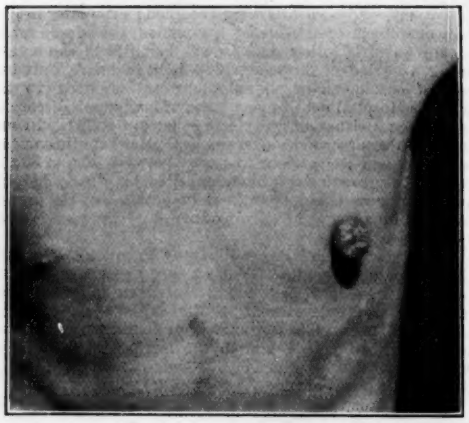
[1] Chita Igakukwai Tasshi, Tokyo, 1901.
[2] Transactions of the Pathological Society of Philadelphia, 1879–81.
[3] Transactions of the College of Physicians, Philadelphia, 1908, vol. xxx., pp. 182–196.
[4] Medical Record, New York, 1888, vol xxxiv., p. 21.
[5] Annals of Surgery, vol. i.
[6] Annals of Surgery, Philadelphia, 1907.
[7] Brit. Med. Jour., 1908, vol. ii., p. 502.

were between 20 and 30. From 1890 to 1899 there were 389 similar cases admitted, of which seven were between 20 and 30 and one below 20. From 1900 to 1909 510 were admitted, of which 57 were between 20 and 30 and eight below 20. Altogether 1209 were admitted during the 30 years, of which nine were below 20 and 67 between 20 and 30. Only five males were admitted with carcinoma of the breast during these years, all of advanced age.

The following is an account of the present case:—

The patient, a girl aged 11, was admitted to St. Thomas's Hospital on June 8th, 1910, under the care of Mr. Battle,

FIG. 1.



Epithelioma of nipple. From a photograph taken before operation.

with a ten weeks' history of attacks of pain in the left nipple. Shortly after the commencement of the pain the nipple was found to be somewhat larger than that on the other side. Treatment consisting of hot fomentations was carried out in the out-patient department four weeks previous to admission; on one occasion the nipple was incised but no pus was found.

On admission the left nipple was found to be enlarged to about the size of a small hazel-nut. Superficially the

FIG. 2.

Section through base of tumour showing cell nests and invasion of deeper tissues by columns of epithelial cells. × 8.

tumour consisted of a layer of horny material, covering the deeper portion which was of softer consistency. There was no infiltration of the subcutaneous tissues, and the tumour was not adherent to the deeper structures. Pain of a stabbing character was produced on palpating the tumour. No enlarged glands were felt in the axilla. (Fig. 1.)

The first operation was performed by the house surgeon, Dr. Maybury, on June 17th. The tumour, together with the subcutaneous tissues down to the pectoralis major, was removed by two elliptical incisions made above and below the nipple and half an inch away from it. Bleeding points were ligatured with catgut, and the wound was closed with salmon-gut. The report from the clinical laboratory was "squamous-celled carcinoma." (Fig. 2.)

The patient was readmitted six weeks later with a soft, painless, polypoid excrescence of about the size of the original nipple growing in the scar. One gland was felt enlarged in the axilla under cover of the pectoralis major. On July 22nd the second operation was performed by Mr. Battle. Two elliptical incisions were made giving the scar a wide berth, and the granulation growth, axillary glands, and sternal portion of the pectoralis major were removed. The report of the clinical laboratory was: "The scar shows chronic inflammation with giant cells around ligatures. Glands normal." There is at the present time no evidence of recurrence.

THE ANALYSIS OF NYSTAGMUS.*

BY ADOLPHE ABRAHAMS, B.A., M.B., B.C. CANTAB. M.R.C.S. ENG., L.R.C.P. LOND.,

MEDICAL REGISTRAR TO THE LONDON TEMPERANCE HOSPITAL.

ALTHOUGH in this country the measurement and analysis of nystagmus have not received much attention, a great deal of time and care have for many years been expended by continental workers upon the subject. As far back as 1878 Rählmann [23] published tracings of nystagmus and differentiated two principal varieties.

The earliest recorded attempt at nystagmography was that of Ewald,[1] who thrust a needle through the cornea of a pigeon into the centre of the eyeball as far as the lens and connected it with a straw which inscribed a kymatograph. Bartels [2] and other observers also adopted similar methods clearly inadmissible in the case of man, and it is interesting to find that Mulder [3] in 1908 employed instantaneous photography. This observer appears, however, to have found the practical details of cinematography insuperable.

In 1910 Buys and Coppez [4] exhibited some cinematographic representations before the French Society of Ophthalmology. But Buys can find no words of praise either for his own results or for the project of cinematographing nystagmus in general. His principal objections are, first, that the maximum rate at which such photographs can be taken (16 exposures per second) is too slow to analyse all the phases. Secondly, he condemns the camera because it fails to bring to analysis any new element but sees very similarly to our eye (an objection which I am not prepared to accept). Finally, he says that in order to photograph nystagmus the eye must be open, a condition which permits fixation of vision and inhibits certain forms of nystagmus. This condemnation is a preliminary to Buys's introduction of his method of exhibiting nystagmus by the nystagmograph. The credit of initiation of nystagmography in the human subject lies with Wojatschek,[5] who in 1908 constructed the photo-nystagmograph.[5 12] Buys's own instrument [6 7] consists of two Marey's tambours which are applied to the eyeball and transmit its movements through rubber tubes to a registering apparatus. (The double registration is advised to eliminate mere movements of the eyelids, for two tracings are by this means obtained; if they are of the same direction they represent palpebral movements, if of opposite directions the movements of the eyeballs have been secured.)

My own work on this subject was begun four and a half years ago. It was prompted by a fairly considerable experience of photography of rapidly moving objects, and at that time I was not aware that continental workers had attacked the subject in the same way. From my experiences with the ordinary models of the cinematograph I am tempted to believe that the failures which continental workers have described were parallel to my own. Subsequently, I had recourse to a more recently designed model made by the Kinora Company, of London, which possesses special features making it particularly suitable for scientific analytical work. Its most distinguishing feature consists in the preparation from the negative film not of a positive film

* An abstract of a thesis for the degree of M.D. Cantab.

but of a bromide paper print, which is then divided into the separate pictures. The latter are then mounted in correct succession upon a cylindrical core from which they radiate like the spokes of a wheel. The reel is placed in a simple viewing machine (held in the hand if necessary), and the pictures are thus presented to the eye with the essential velocity of succession. These pictures, it must be added, can be mounted with perfect register to a degree of accuracy measurable in thousandths of an inch. The "living picture" effect is remarkably satisfactory, and the reproduction, one may assume, is scientifically accurate. More important still, an advantage of this system is that the pictures are conveniently separable, so that each one is available for individual examination.

The technical details of the camera need only slight description. In my experiments the machine was driven by an electromotor—a mechanical force is preferable to a manual one for its most perfect regularity. The speed, which was variable at will, was afterwards ascertained by driving the motor at the same speed and photographing the second-hand of a watch, the extent of movement of which during a series of pictures could then be measured.

In my earliest experiments the machine was driven at its fastest, and the maximum frequency at which the pictures were taken was 30 per second. In subsequent experiments the frequency was 20 to 25 per second. The exposure of each varied between 1/105th and 1/60th second, and since the largest possible image is required it is imperative that experiments should be conducted in brilliant sunlight or in an artificial light of very high actinic value, the most useful varieties of which for cinematography are the mercury-vapour lamp and the enclosed arc which are even preferable to sunlight because of the facility afforded for concentrating the light upon the subject to be photographed. By the courtesy of the Kinora Company I had the very great advantage of working in their convenient studio, which is lit by a number of mercury-vapour lamps.

Method of Experiment.

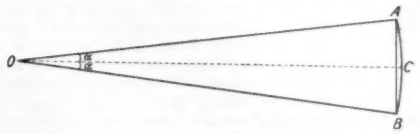
Photography of post-rotation nystagmus.—The subject seated himself leaning forward in a chair and the eyes were focussed with extreme care. He then stood up with his eyes shut and was rotated counter-clockwise, 11 revolutions being performed in 23 seconds, the number and frequency of which are approximately the optimum agreed upon by Bárány, Hennebert, Buys, Scott, and other authorities. He was then immediately led to the chair and placed with the minimum of delay in position. He was told to fix his eyes upon a point to the right, and the machine was then set in motion. The first attempts were complete failures owing to the small size of the photographs obtained. Later, I photographed *one* eye only, the right, and I adopted also the use of a mask fixed to the chair into which the face could be fitted, so that anxiety regarding resumption of the exact position was reduced to a minimum. Across the right hand opening in the mask two fine threads were stretched at right angles to one another to appear in the photographs as a fixed point from which to measure. In the pictures thus obtained, nearly three-quarters of the film is occupied by the image of the eye, so that only a very slightly larger image could have been secured. The photographs were then enlarged four times, thus giving a picture of an eyeball 33·3 mm. from canthus to canthus, the cornea or iris upon which measured 9·3 mm. in width. The reel was then dismantled, and the 640 picture comprised were numbered consecutively. Each was then investigated in the manner I shall now describe.

As in each picture the intersection of the cross-lines acts as a fixed point, measurement thence to the inner end of the iris (which is sufficiently sharply demarcated) will give a numerical indication of the movement. As the right eyeball moves inwards this distance increases; as it returns outwards this distance decreases. The most convenient method of measurement I found to be as follows. Each photograph was fixed in turn upon the mechanical stage of a microscope. A fine glass slide, upon which two cross-lines were optically ruled, was then placed upon the stage so that it could be moved horizontally and vertically over the photograph. The eye-piece and objectives were removed from the microscope, and observations were taken through the empty barrel. The mechanical stage was operated until the ruled lines on the slide coincided with those of the cross-line in each photograph; the reading upon the vernier was then noted. The slide was then moved horizontally until the vertical line coincided with the inner limit of the iris; another reading was taken and subtracted from the first. By measuring directly the width of the eyeball of the subject and comparing this with the width in the photograph, a ratio is given between the actual movement and that measured, so that an absolute measure of nystagmus is afforded.

It is admissible that by this method of measurement the element of personal error is not absent. But in the case of the majority of the pictures at least six independent readings were taken on one or more occasions, and the final result selected was an average or a majority in favour of one figure.

It is perhaps necessary to explain that absolute results are quoted on the assumption that the movement is purely in a horizontal plane. This, of course, is not the case, and the actual movement is the arc of which the linear movement given is the chord. But a simple calculation shows the difference to be too minute for consideration.

FIG. 1.



If O is the centre of the axis of rotation of the eyeball, A C B represents the extent of the movement of nystagmus and A B is the distance actually measured. O C, according to the most recent work on the subject, is in an emmetrope 14 mm.

Take A B to be 2·5 mm., approximately the maximum amplitude recorded.

$$\sin \frac{\alpha}{2} = \frac{1{\cdot}25}{14} = {\cdot}08929$$

$$\therefore \frac{\alpha}{2} = 5°, 7{\cdot}35'$$

$$\therefore 2\frac{\alpha}{2} = \angle A O B = 10°, 14{\cdot}7' = 10{\cdot}245° = \frac{10{\cdot}245 \times \pi}{180} \text{ radian.}$$

$$= {\cdot}1788 \text{ radian.}$$

$$\therefore \frac{\text{the arc A C B}}{14} = {\cdot}1788$$

$$\therefore \text{the arc A C B} = 2{\cdot}5032$$

that is to say, the difference between A B, the measured amplitude, and A C B, the actual amplitude, is only ·0032 mm.

Results.

In post-rotation nystagmus.—So much confusion in the nomenclature exists in this country that it is perhaps advisable to point out that "nystagmus" so produced is not nystagmus in the true sense of the word, but "nachnystagmus"—post-rotation nystagmus. In rotation to the right the right labyrinth functions, and it is to it that nystagmus is due: and although Buys and Hennebert by the nystagmograph were able to demonstrate nystagmus, this is clearly impossible by photography, but the example, as I have already stated, is of "nachnystagmus." (Buys has actually *observed* nystagmus during rotation by utilising a special arrangement which permits the observer to rotate simultaneously with the subject.[9])

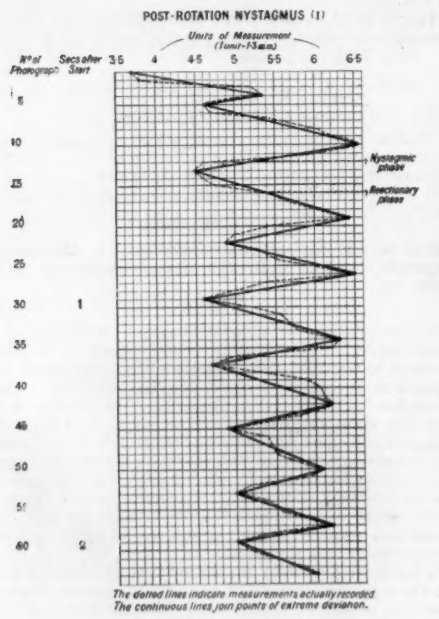
By the cinematography of post-rotation nystagmus I found that the movement persisted for at least 11 seconds. Although movement probably continues for some seconds longer it is not sufficiently defined to be visible in the photograph. During that 11 seconds there occur 44 distinct movements of the right eye towards the inner canthus and the same number of distinct movements to the opposite side. As regards the necessary nomenclature, Buys premises that of these two movements the slower is the first to be produced, and that the direction of the nystagmus is defined by the direction of the more rapid movement.[11] He calls the more rapid movement the nystagmic (primary) phase and the slower movement the reactionary (secondary) phase.

In the experiment in question, rotation of the subject was to the left; nystagmus would be produced to the left, and the "*nachnystagmus*" *which was photographed*, to the right. Even naked-eye observation shows that the oscillations of

deviation and return (the nystagmic or primary and the reactionary or secondary phases) have different velocities. This type of nystagmus is known as rhythmical, jerky, spring nystagmus, or "nystagmus à ressort." The other type of nystagmus, in which the movements of deviation and return have identical velocities, is known as ondulatory or pendulum nystagmus.

Taking an average throughout the series, the ratio 3 : 5 is almost exactly obtained as regards duration of the nystagmic and reactionary phases; in fact, the exact ratio obtains in 15 out of the 44 combined movements. The two phases are approximately equal as regards the extent of the excursion. The velocity of the movements is curiously irregular in both directions, particularly that of the reactionary phase, and the variability appears to correspond to no system. Thus, calculating the degree of movement in each 1/30th sec., in no fewer than 36 nystagmic phases is the duration 3/30th sec., no matter whether the extent of movement is great or small—viz., as great as 2·6 mm., as small as 0·65 mm.; and in some the velocity is most rapid at the beginning, in others most rapid in the middle, and in others, again, most rapid in the last 1/30th sec. of its movement. The second nystagmic phase recorded had an amplitude of 2·6 mm., with an average velocity throughout of 26 mm. per second. (It occupied 3/30th sec., and in each 1/30th sec. the extent of movement was 1·43, 1·04, and 0·13 mm.) This was the greatest amplitude and the highest average velocity throughout the series. The greatest amplitude of the reactionary phase was 2·34 mm. (the second), the highest average velocity was 15·6 mm. Although these are isolated examples of maximum velocity they correspond curiously enough to the relation 5 : 3 exactly. (Fig. 2.)

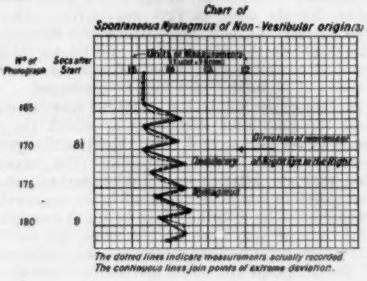
FIG. 2.



It seems fair to accept this relation of 3 : 5 if the duration of the phase, or 5 : 3 if the velocity is considered, as a constant relation between the nystagmic and reactionary phases. Bearing in mind the existence of intervals beween successive exposures, it will be understood that could such intervals be obliterated a greater number of readings with the relation 3 : 5 would be obtained. No interval of rest occurs between the termination of one phase and the beginning of the other, or at least such an interval of rest must be less than 1/30th sec., or it would be evident in two consecutive pictures. The observed eye, as it comes to rest, takes up a position to the outer side of the orbit, and its position of rest is in the direction of nystagmus—i.e., further away from the side of stimulation than the mean position of deviation at the beginning of the movement.

Photography of nystagmus elicited by intra-meatal compression in a case of labyrinthine fistula.—(For the details of this case I am much indebted to Mr. Sydney Scott.) The patient, a girl aged 17, had suffered from bilateral otitis media chronica from infancy. The radical mastoid operation was performed on the right ear, and during subsequent dressings, on syringing or on pressure with a probe, the patient turned her head forcibly to the left and nystagmic movements were produced. ("Apparently," Mr. Scott adds in his notes, "the rate of the alternating movements was the same in the two directions.") Photographs were taken of

FIG. 3.



the right eye during the period when nystagmus was elicited by intra-meatal compression with a Politzer's bag connected with the ear by a rubber tube which was tightly fitted into the meatus. The analysis of the movements produced show no indication of any attempt at spring nystagmus (jerk nystagmus or "nystagmus à ressort"), but the nystagmic and reactionary phases are approximately equal in extent and in velocity—pendulum nystagmus.

Photography of spontaneous nystagmus of non-vestibular origin.—Photographs were taken of the right eye when fixed upon points to the right, to the left, and straight in front. Nystagmus is of the ondulatory type and the duration is on the whole remarkably constant in both directions, since, at all points observed, the average duration departs so little from 1/15th sec. that bearing in mind the mechanical principles of exposure this figure may be taken as absolute. During the photography of this case a long voluntary movement occurred, and it is interesting to note that the velocity throughout was regular and for the greater part of its course was as high as 78 mm. per second, which is about three times the velocity of the most rapid post-rotation nystagmus. (Fig. 3.)

Comparison with results of Buys's nystagmograph.—On the one hand, the personal labour in the preparation, photography, and subsequent investigation by the photographic method is very great, whilst the experiment by the nystagmograph is a matter of a few minutes only. On the other hand, photographic results have a distinct advantage—the instrumental error is removed, whereas, in the case of the nystagmograph, the results are such that one is faced by the problem whether or no the irregularities demonstrated are instrumental in origin or an essential feature of the movement demonstrated. In none of Buys's publications can I find any reference to details indicating relative and absolute duration of the various oscillations, and, in fact, the Tracés Graphiques which he publishes are such that it is difficult to see how any such analysis of these tiny movements would be possible.

At the same time, it is only fair in the interests of the nystagmograph to state that Buys and Coppez have had the opportunity with this instrument to investigate a very large number of cases, and Coppez[4 6] has published a description of the analysis of the forms of the oscillations obtained. I have previously mentioned that in post-rotation nystagmus the variability of the velocity appears to correspond to no system. Coppez analysis makes for definite regular variations, which, however, I cannot correlate with any of my results. Coppez, again, describes features in ondulatory nystagmus which I have been unable to recognise, and

Wojatschek has elaborated still further complicated systems.[10]

It remains only to add that these systems are very unconvincing, and a closer inspection of the tracings gives scope to dwell upon innumerable irregularities and (it is hardly too much to say) to reconcile these with all sorts of classifications. In fact, Coppez, who insists upon many of the varieties, admits that the attempt to establish any relation between them and the affection which causes them leads to the discovery of too many exceptions.

All attempts at the photography of miner's nystagmus were unsuccessful—the oscillations appear to be both too small and too rapid for cinematography. Buys says that it is ondulatory in type.

A collection of the observations of many observers[11] upon many forms of nystagmus groups them into the two varieties, "nystagmus à ressort" and ondulatory nystagmus, as follows:—

Nystagmus à ressort.—Nystagmus of muscular pareses. Cerebellar and vestibular disturbances. Vertigo (when it depends probably also on vestibular disturbance). Hereditary ataxia of Friedreich. All conditions which reduce the capacity of the posterior cerebral fossa. Certain cases of congenital amblyopia.

Ondulatory nystagmus. — Double complete cataract. Amblyopia. Photophobia. Tabes.

In disseminated sclerosis both kinds are seen.

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St. Bartholomew's Hospital.

MEDICAL SOCIETY OF LONDON.—The annual Oration was delivered on May 26th by Sir William Whitla, on the Trend of Thought in Recent Pharmacological Research. It will be found published in full in THE LANCET this week. The chair was taken by the President, Sir W. Watson Cheyne, and a large number of Fellows and visitors attended. A vote of thanks to the orator was moved by Sir Lauder Brunton, seconded by Dr. H. Macnaughton-Jones, and passed with acclamation. The Oration was followed by the customary Conversazione, at which a musical programme was given by Pitman's Blue Viennese Band.

A CASE OF "IDIOPATHIC" CEREBRAL ABSCESS.

BY JOHN HENDERSON, M.D., CH.B. GLASG., F.R.F.P.S. GLASG.,

SENIOR ASSISTANT PHYSICIAN, GLASGOW ROYAL INFIRMARY; ASSISTANT TO MUIRHEAD PROFESSOR OF MEDICINE, GLASGOW UNIVERSITY.

IN a very large percentage of cases of cerebral abscess the determining cause is easy of recognition, but in the remainder it is either very difficult or quite impossible to assign a cause. Cases in which the etiology was very obscure have been from time to time recorded in medical literature. Oppenheim[1] refers to several such cases, though at the same time he recognises that septic material circulating in the blood may pass directly to the brain, giving rise to a primary purulent encephalitis. Idiopathic cerebral abscess must be a very rare condition—so much so that Osler[2] states that it need scarcely be considered; but in a case like the one I am about to relate, where there was no cause assignable during life, nor discoverable post mortem, the term "idiopathic" seems to be quite justifiable. This case first came under my notice on Oct. 11th last, when I was asked to see the patient in consultation with his medical attendant. Four days later he was admitted to the Glasgow Royal Infirmary under the care of Professor W. K. Hunter. As the case is interesting from several points of view I give the notes in some detail.

The patient was a schoolboy aged 13. He had had the usual disorders of childhood, but was otherwise very healthy until April, 1912, when, on awakening one morning (the 5th), he complained of severe headache. A few minutes later he had a convulsive seizure, the face becoming cyanosed and the limbs being violently jerked about. This convulsion lasted about 30 minutes, and was followed at intervals during that day by seven others of a similar nature. Next morning there was a further convulsion, and the medical man in attendance advised the boy's removal to Belvidere Fever Hospital, on suspicion that he was suffering from cerebro-spinal meningitis. On the next day he seemed to be perfectly well, and an examination of the cerebro-spinal fluid, obtained by lumbar puncture, was quite negative. He remained well till May 3rd, when he had an attack of sickness and vomiting, but thereafter he presented no symptoms of illness, and was dismissed well on the 29th. There was during his residence no return of the convulsions and no complaint of headache.

After the patient's return home he was perfectly well for a few weeks, but then the headache began to reassert itself. It recurred at intervals of about a week, with varying severity, until the beginning of October, when the pain became almost constant and always frontal in distribution. It was usually felt on rising in the morning, then diminished after an hour or two, only to return with increased severity later. Often it was much less severe, or almost absent in the evening. Along with the constant headache he exhibited great restlessness and sleeplessness. About Oct. 3rd he again became sick and vomited, and until admission to hospital the sickness was rarely absent. Fits of vomiting, without definite food relation, occurred three or four times daily, the vomitus being described by the boy's mother as "just like bile." Four days before admission he had a convulsive seizure, the limbs being very rigid and the eyes rolling about. This only lasted a few minutes, and was not repeated. There was no history of injury to the head at any time, ear trouble, or other septic process. The family history was satisfactory except in the case of one sister, who died in childhood from bronchopneumonia, which from the description may have been of a tuberculous nature. Social conditions were satisfactory.

On admission to hospital the temperature was normal, the pulse was 76, and the respirations were 26 per minute. He was very restless, tossing about, and moaning querulously most of the time. The cheeks were flushed and an oro-nasal pallor was noted. The pupils were unequal, both being dilated and the right larger. Their reactions to light and in convergence, though present, were not very active, the right being more sluggish and less perfect. There was no

[1] H. Oppenheim: Text-book of Nervous Diseases, vol. ii., 1911.
[2] Osler: The Principles and Practice of Medicine.

strabismus. Knee-jerks were present, though not at all active, and plantar reflexes were flexor in type. Kernig's sign was present in both legs, but more markedly in the left. A well-marked tache cérébrale was present. The abdomen was markedly retracted, and of the typical scaphoid shape. There was no abdominal tenderness or rigidity. Some rigidity of the neck muscles was noted, but there was no definite retraction of the head. The pulse was regular in force and rhythm, of normal tension, and full in character. The cardiac area was found to be normal and the sounds pure at all the areas. Nothing abnormal was noted in the lungs. The limits of hepatic dulness were normal, and neither liver nor spleen could be palpated. The urine showed a faint haze of albumin, but no other abnormality. On ophthalmoscopic examination the optic discs were seen to be very red and their edges somewhat blurred, but the vessels could be easily seen.

For two days the condition of the patient remained much as before. The headache and sleeplessness persisted and the temperature remained normal. Thereafter a slight degree of proptosis of both eyeballs was observed. Next day the patient vomited just after breakfast, the vomitus consisting almost entirely of the food ingested and but little altered. It contained no free hydrochloric acid. The headache became more severe, and on Oct. 20th the temperature rose for the first time, reaching 100° F. in the afternoon. There was no further sickness, and the pulse was weaker. Next day he was less restless but seemed dull. It was considered advisable to try the effect of tuberculin injections, and about noon a first dose of 1 c.c. tuberculin S.B.E. (1/100,000th dilution) was injected into the abdominal wall. In the afternoon the headache returned with great severity, the pulse became weak and rapid, and he was practically unconscious. Between 8 P.M. and midnight the temperature rose from 98·4° to 103·8°, and the pulse-rate to 136 per minute. A slight temporary improvement followed, but about 4 A.M. on the 22nd he died.

Throughout the boy's stay in hospital until the day before death he was able to understand perfectly all that was said to him. He was also able to read, and was noticed reading papers while in bed. He had no difficulty in recognising objects used by him and in knowing their uses, and he was able to recognise and speak to his friends till the day before death. There was never any discharge from the ears, and his hearing was quite unimpaired.

Fortunately in this case permission was obtained to have a post-mortem examination. On opening the head the dura mater appeared to be tightly stretched, and the surface of the brain was dry, anæmic, and flattened. In the left lower parietal region there was a large thin-walled cyst, causing a considerable external bulging. This proved to be a large abscess about three inches in diameter. The convolutions affected were most probably the gyrus supramarginalis in its whole extent, and the posterior central, angular, and superior temporal towards the margin of the abscess. This abscess extended inwards about the level of the corpus callosum, and had burst into the ventricles. Pus was also escaping around the crura cerebri, and there was at the base an early acute meningitis, extending right down the spinal cord. There was no spreading above the tentorium cerebelli or along the Sylvian fissures. The middle ears were examined and proved to be quite healthy. Nothing noteworthy was found elsewhere, all the internal organs, both of chest and abdomen, being quite healthy.

This case is worthy to be placed on record for several reasons. The symptoms and course of the disease were not at all typical or characteristic, and the absence of any assignable cause during life, with the failure to discover a cause on post-mortem examination, rendered a correct diagnosis extremely difficult, if not quite impossible. In such cases, with no evidence of the origin of infection, a diagnosis of abscess must always be absolutely uncertain. In doubtful cases, in which the more frequent causes can be excluded, various causes have been suggested by writers on this subject. Strümpell, for instance, suggests that we must assume that the abscess is related to an infective disease, especially to cerebro-spinal meningitis, "the abscess either following, or developing at the time of an epidemic." Curiously enough, the onset of illness in the present case was associated with symptoms which suggested to the medical attendant the presence of such a condition. This provisional diagnosis was not confirmed in hospital, the condition being regarded as a toxæmia arising from a fairly chronic constipation, from which he quite recovered under treatment. In any case the acute symptoms of April 5th, 1912, were the first manifestations of illness in a boy who had always till then been healthy. There is a strong suggestion that these symptoms marked the onset of the formation of abscess six months before death, though, if this be so, one would have expected the abscess to have had a more thickened capsule. However, the headache, sickness, and vomiting were rarely absent for any length of time during that period. The course of the disease, and its symptoms, as will be seen from the notes of the case, gave no definite indication of the true nature of the condition. Further, there never was any localising symptom, and there was no rigor. In fact, when I saw the patient first on Oct. 11th the evidence seemed to point to meningitis (though not very acute) or cerebral tumour (without any focal symptom). In the absence of any possible cause the question of cerebral abscess was hardly considered. The later progress of the case appeared to confirm the opinion that we were dealing with a meningitic condition, and, as already indicated, the possibility of its being of a tuberculous nature was entertained. Lumbar puncture was not performed during the final stage of the illness, though beyond possible evidence of a purulent meningitis no indication for diagnosis could have been obtained. It may be added further that owing to its site this abscess, though of considerable size, gave rise to no focal symptom, thus giving no indication for the employment of any radical operative measures.

I have to thank Professor Hunter for permission to publish this case, also Dr. Alexander Johnston, of Belvidere Fever Hospital, for providing me with notes of the case while the patient was in that hospital.

Glasgow.

A BACILLUS OF AN UNUSUAL KIND ISOLATED FROM A CASE OF SEPTICÆMIA.[1]

BY J. A. BRAXTON HICKS, M.D. LOND., D.P.H. CANTAB.,

ASSISTANT PATHOLOGIST TO WESTMINSTER HOSPITAL, ETC.

THE following is an account of a case of a true septicæmia caused by an organism belonging to the saprophytic group of bacteria, and therefore not commonly found as the cause of what is usually termed "septicæmia."

The clinical history of the case is most interesting and is as follows:—

The patient, aged 58, was admitted to the Westminster Hospital on August 21st, 1911, under the care of Dr. Stanley Dodd, to whom I am greatly indebted for the clinical notes on the case. She was a widow of ten years' standing, had had five children and no miscarriages, the youngest child being 21 years old, and the menopause had passed "some years ago." She complained that for the past eight months she had suffered from a vaginal discharge, at first merely the "whites," but latterly it had become blood-stained and offensive. On admission her temperature was 100·4° F., an offensive vaginal discharge was present, and bimanually under an anæsthetic the uterus was found to be enlarged and the external os patulous, while in the right pouch of Douglas was a "lump" of about the size of a hen's egg. The uterus itself was explored, but nothing abnormal was found. After the operation the temperature still remained up, falling, however, almost to normal four days after the operation. On the seventh day after the operation the patient had a rigor, and the temperature rose to 105°. The temperature continued to fluctuate between 99·5° and 105°, with the occurrence of almost daily rigors till the patient's death on Sept. 15th (three weeks after admission). Her mental condition was peculiarly clear up to 24 hours before death, when a typhoid state supervened, and her physical condition was not that acute deterioration which not infrequently is the accompaniment of a septicæmia. During the last fortnight of her life I on two occasions withdrew 10 c.c. of blood from the right median basilic vein, and isolated on both occasions the bacillus I shall later on describe.

A post-mortem examination was made by me on the body seven and a half hours after death, and the following conditions were found:—

The body was pale, still warm, and fairly nourished. There were numerous petechial hæmorrhages scattered over the abdomen. The uterine mucosa was in a condition of septic endometritis with hypertrophy and œdema of the muscular wall. The cervix was patulous and injected, while at the fundus uteri was a small submucous polypus. Several interstitial and subperitoneal fibroids were also present. In the

[1] A paper read before the Pathological Section of the Royal Society of Medicine on March 18th, 1913.

right broad ligament was a cyst of the size of a hen's egg, containing brownish, foul-smelling, purulent material. This cyst was adherent to the right lateral wall of the supravaginal cervix. The remains of the right ovary were flattened out over the cyst, but the tube itself was normal. The left tube, ovary, and broad ligament were normal. The inferior vena cava in its lower 4 inches and the upper part of the right iliac vein were full of firmish yellow clot (septic). Both lungs were full of septic infarctions, some of which were softening. The heart contained much clot, otherwise nothing noteworthy. Spleen large and soft; liver and kidneys yellow from toxinæmia. No infarctions found other than those in the lungs.

The bacteriology of the case now alone remains to be described, for from the blood twice during life, and from the spleen and suppurating ovarian cyst after death, I isolated a bacillus identical in each case. The bacillus had the following characteristics:—

Morphology, &c.—The bacillus was a "coliform" Gram-negative, actively motile bacillus, growing well on all media and lasting well in subculture.

Broth became cloudy and soon gave off an unpleasant odour. *Agar-agar* showed a white slimy growth in 24 hours, becoming yellowish and yellowish-brown later. *Gelatin* was slowly liquefied from above downwards. *Milk* clotted with practically no acid formation in 24 hours, and in 48 hours the clot started to liquefy from above downwards and subsequently became brownish.

Sugar litmus peptone.—The reactions of these are somewhat variable even in successive subcultures. The most constant feature is the marked acidity and gas production in glucose in 48 hours. In mannite, maltose, and lactose there was, as a rule, a faint trace of acid formation and a bubble of gas. In sucrose the acid formation was rather more than in maltose, &c., but much less than in glucose, and only a bubble of gas was found. All cultures subsequently tended to become alkaline, though this was least marked in sucrose. All the cultures had an unpleasant odour. *Potato* showed a fawn-coloured growth in 24 hours, becoming darker later.

Pathogenicity.—This was only tested on guinea-pigs, and fairly strong emulsions were found to be highly virulent for these animals, whether injected intraperitoneally or subcutaneously. The organism was recovered easily from the peritoneal fluid after death of the animal, the other appearances being those of septicæmia. Weaker emulsions were survived by guinea-pigs.

Conclusions.—The bacillus just described belongs, I consider, to that group of bacteria known as the "proteus group," its growth in media with production of a foul odour, its liquefaction of gelatin and milk clot being the features relegating it to this group. It is pathogenic to the guinea-pig and in the case recorded to a human being. It is this latter fact that has led me to consider this case worthy of record, for here is an organism which belongs to the group of saprophytic organisms causing a true septicæmia such as is usually associated with the parasitic bacteria. Lastly, it is probably a new species, its nearest ally being a member of the group described by Hauser.

Queen Anne-street, W.

A CASE OF COLOCYNTH POISONING.

BY R. B. ROE, M.R.C.S. ENG., L.R.C.P. LOND.,

HOUSE PHYSICIAN, ST. GEORGE'S HOSPITAL.

As colocynth poisoning appears to be comparatively rare in Great Britain the following case may, perhaps, be of some general interest.

A woman, 25 years of age, took 75 gr. of colocynth in powder on Jan. 27th at 10 A.M. At 11 A.M., after taking a cup of tea, she vomited, and for the next two and a half hours vomiting and diarrhœa appear to have been severe. At 2 P.M. she came under the observation of her medical attendant, who found her free from pain, with a flaccid abdomen, which was not tender on palpation. The pulse was normal. She was given some thin arrowroot but was unable to keep it down. Vomiting and diarrhœa persisted throughout the afternoon and early part of the evening. At 8.30 P.M. she felt better and was able to retain milk and arrowroot, after which she got some sleep until 5 A.M., when severe vomiting recurred, and at 9 A.M. she had brought up rather less than a pint of bilious fluid, but the diarrhœa had stopped. She was then given liq. calcis m.xx. and liq. morph. m.x. every six hours. This, however, she vomited.

Some hours later, her condition being the same, she was transferred to St. George's Hospital. On arrival she looked exhausted, her eyes were sunken, and the skin was dry; the tongue was dry and furred, and she complained of great thirst. The pulse was rapid, 120, full, strong, and bounding. The temperature was 100° F. On further examination the eyes reacted to light and to accommodation; the pupils were equal. There were no pains in her limbs, but she complained of a considerable amount of abdominal pain of a colicky nature, and she was still retching a good deal. The abdomen moved well on respiration, was flaccid, but there was tenderness over the lower part of the abdomen, which was relieved by firm pressure. There was no incontinence, headache, or tinnitus aurium, and she was in full possession of her mental faculties. Morphine, gr. 1/4, and atropine, gr. 1/100, were injected subcutaneously immediately. Three watery motions, containing a considerable quantity of blood, were passed in the first two hours after admission, while five hours later, as she was still retching, a further 1/6 gr. of morphine was injected, after which she felt more comfortable and later fell asleep.

On the next morning (Jan. 29th) there were still some pain and tenderness over the abdomen, but she was able to retain milk. Her temperature fell to normal, but the pulse was still rapid, 120. The stools contained blood, but not so much as on the previous day. The urine, except for a deficiency of chlorides, was normal. The blood pressure was 115 mm. Hg, and an examination of the blood showed no abnormality. She was now given chloretone, m.v, in olive oil, every six hours, and placed on a purely milk diet. On the following day there was no abnormal pain or tenderness, the motions were becoming formed, and the test for occult blood proved negative, and from this point onwards an uneventful recovery was made.

Reference to literature shows how uncertain this drug is in its action, and also what a wide range of symptoms may occur. The smallest fatal dose for a human being appears to be a drachm, though Tidy stated that for a dog 3½ drachms is the smallest fatal dose.[1] Orfila, however, relates the case[2] of a man who took 3 ounces for gonorrhœa and recovered. In most cases it has been taken as an abortifacient. In doses of from 30 to 60 gr. the most constant symptoms are shooting pains in the limbs, muscular weakness, drowsiness, a feeling of constriction in the throat, much thirst, abundant salivation, dysphagia, and sometimes a pruriginous eruption extending over the whole body. Larger doses of from 1 to 2 drachms give rise to additional and more severe symptoms—namely, trismus of the jaws and marked tonic contraction of limbs, the eyes become dull and sunken, the pupils dilated and fixed. The heart is accelerated at first, but a period of depression ensues, the heart-sounds becoming more rapid and fainter until they cease, while the respirations, which are also accelerated in the early stages, become increased, there being often marked dyspnœa in the final stages.

Nearly all the cases wherein doses of 110 gr. and over were taken have ended fatally,[3] and in these cases the central nervous system is generally affected; giddiness, tinnitus aurium with increasing deafness, and, in one case, partial facial paralysis have been noted. The gastro-intestinal symptoms of severe vomiting, diarrhœa, and abdominal pain, which are constant features in all cases, become uncontrollable and lead to rapid collapse of the patient. The kidneys, when affected, are permanently damaged, and severe hæmaturia, with large amounts of albumin, accompanied by great frequency of micturition, occurs.

With regard to the post-mortem changes, in some cases nothing abnormal has been found. Tidy, indeed, related one case in which the stomach was "preternaturally pale." In the majority of cases, both congested and pale areas with small ulcers of recent origin have been found on opening the stomach, while similar appearances with submucous effusions of blood in the small and large intestines have been noted. The liver and kidneys may be enlarged and congested, or may be normal. The great veins are generally distended with blood. The heart shows no abnormality; neither do the meninges or brain.

I am greatly indebted to Dr. H. D. Rolleston both for his permission to publish this case and his help in preparing these notes.

St. George's Hospital.

[1] Tidy: THE LANCET, Feb. 1st, 1868, p. 158.
[2] Tidy: Medical Press and Circular, December, 1868.
[3] Archives de Médecine Militaire, 1909.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

Discussion on the Etiology of Unilateral Paralysis of the Recurrent Laryngeal Nerve.

A MEETING of this section was held on May 2nd, Mr. HERBERT TILLEY, the President, being in the chair.

Dr. F. DE HAVILLAND HALL introduced the subject by giving the table of the causes of recurrent paralysis compiled by Sir Felix Semon:—

I. BULBAR AND BULBO-SPINAL AFFECTIONS.

1. Hæmorrhage and softening.
2. Syphilitic processes.
3. Tumours.
4. Diphtheria.
5. Progressive bulbar paralysis.
6. That curious form of systemic central nervous disease, first described by Hughlings Jackson and Morell Mackenie, in which one-half of the tongue, the corresponding half of the palate, the corresponding vocal cord, and in a number of cases the corresponding trapezius and sterno-mastoid muscles are affected.
7. Amyotrophic lateral sclerosis.
8. Disseminated cerebro-spinal sclerosis.
9. Syringomyelia.
10. Tabes dorsalis.

II. PERIPHERAL AFFECTIONS.

1. Acute rheumatic influences.
2. Catarrhal neuritis.
3. Toxic influences (lead, arsenic, &c.).
4. Tumours in the posterior cavity of the skull, or in the foramen lacerum or foramen jugulare.
5. Pachymeningitis.
6. Traumatism (unintentional ligature of nerves, injection of iodine into a goitre, cut-throat, stabbing injury during extirpation of a goitre, &c.).
7. Tumours of neck (goitre, peritracheal glands, &c.).
8. Aneurysms of the arch of the aorta, innominate, subclavian, carotid.
9. Mediastinal tumours (malignant, tuberculous, calcification of bronchial glands, &c.).
10. Pericarditis.
11. Pleurisy.
12. Tuberculosis and pleuritic thickening of apex of right lung.
13. Chronic pulmonary affections (chronic pneumonia, anthracosis, &c.).
14. Infectious fevers (typhoid, &c.).
15. Œsophageal carcinoma.

To this he only added dilated left auricle, such as existed in mitral stenosis. As an instance of this cause he related the case of a girl aged 19, in whom the onset of paralysis of the left cord in the cadaveric position was characterised by attacks of choking, particularly when swallowing hot fluids. The combined figures taken from the Proceedings of the Laryngological Society and his own cases were:—

	Right.	Left.
Aneurysm of arch of aorta	3	28
,, ,, (subclavian)	1	0
Mitral stenosis and enlarged left auricle	0	4
Enlarged bronchial and other glands	1	6
Disease of apex of lung	1	0
Malignant disease of lung	0	8
New growths in thorax	0	5
Malignant disease of œsophagus	9	8
Thyroid tumours	3	2
Influenza (vocal cord not stated, 1)	2	0
Diphtheria, lead (one each)	0	2
Neuritis	4	2
Tabes, syringomyelia, disseminated sclerosis, bulbar paralysis, general paralysis of insane	3	6
In combination with other paralyses, as hemiplegia, facial, palato, pharynx, trapezius, and sterno-mastoid	6	4
Doubtful cause	0	7
(Side not stated, 1)	33	82

Note.—In 82 cases the left recurrent was implicated; in 33 the right recurrent, and in one case the side was not mentioned.

The conclusions were summarised as follows: 1. Aneurysm of the aortic arch was the most common cause of recurrent paralysis, and might be the only symptom for a year. 2. The left recurrent nerve was almost exclusively affected in aortic aneurysm; the transverse and descending arch constituted the particular site. 3. The occurrence of valvular disease was a cause of recurrent paralysis. 4. When the paralysis was due to pressure it was almost always on the left side, which was four times more frequent than right unilateral paralysis. 5. In malignant disease of the œsophagus the recurrent nerves were almost equally affected. 6. Right recurrent paralysis and dysphagia were almost always due to malignant disease of the œsophagus. Left recurrent paralysis and dysphagia were usually due to this disease. 7. If recurrent paralysis be due to central causes the nerves were affected nearly equally. 8. Age factor. In children, diphtheria, tuberculous glands, cervical spinal caries, and meningitis. In young adults, pulmonary tuberculosis, pleurisy, and mitral disease. From the age of 25 to 55, aneurysm; after 60, malignant disease. Sexual factor; infrequency of aneurysm in women; the figures are 1 to 8.

Sir DAVID FERRIER contended that the Semon Rosenbach law should be regarded as an illustration of his view that in motor-nerve trunks the nerve fibres of extensor muscles were more vulnerable. Paralysis of the recurrent laryngeal nerve was either (1) complete (in which case the cord was relaxed and assumed a cadaveric position); or (2) incomplete (more common), when the posterior crico-arytenoid muscle was more affected than the adductors. The toxins of beriberi and lead picked out the extensors, as did also the pressure of the fœtal head in the case of the anterior crural nerve. Injections into the sciatic nerve had a selective effect, and after death the extensor nerves lost their power first. In tabes there was probably a neuritis of the vagus trunk, and the recurrent was affected in this selective fashion and led to abductor paralysis. The nucleus ambiguus, or motor nucleus of the tenth nerve, was closely related to other nuclei. In only two tabetic cases had central changes been proved, and in one of these other nuclei were involved with no resulting symptoms. The nucleus ambiguus supplied three nerve branches: (1) Upper, supplying the crico-thyroid and œsophagus; (2) middle, distributed to the palate; and (3) lower, which supplied the recurrent laryngeal and inhibitory fibres to the heart. In bulbar disease and muscular atrophy no selective abductor action could be recognised.

Dr. W. PERMEWAN stated that cases due to aneurysm were not so frequently published as those due to the rarer causes, hence the preponderance of these cases in the records. Of Avellis's cases published in 1891, in nearly one-half the cause was not ascertained.

Causes of Paralysis.

Tubercular infiltration of lung:—		After tracheotomy	1
Right 7 / Left 5	12	After syphilis	3
Enlarged gland in neck	7	? Paralysis or contracture	2
Abscess of cervical vertebræ	2	Pleuritis sicca	2
Goitre	14	After diphtheria	1
Pericarditis	1	Bronchial gland	1
Tumour of œsophagus	5	With furuncle in neck	1
Aneurysm	24		78
Cerebral disease	1	Unascertained causes	72
After operation on goitre	1	Total	150

Taking the record of the last ten years and classifying according to Sir St Clair Thomson's scheme, he had collected 360 cases. The greater accuracy had resulted from: (1) the use of X rays; (2) the recognition of paralysis of the cord in chronic bulbar lesions; (3) the assignment of toxic causation; and (4) the discovery of the association of paralysis with forms of cardiac enlargement.

UNILATERAL LARYNGEAL PARALYSIS.

Analysis of Cause in 360 Cases.

(1) *Cerebral lesions* (Casselbury)		6
(2) *Bulbar lesions*:—		
(*a*) Vascular, thrombosis, embolism, hæmorrhage		1
(*b*) Syphilitic		4
(*c*) Tumour, aneurysm, abscess		0
(*d*) Diphtheria		2
(*e*) Degeneration of nuclei:—		
Bulbar paralysis	1	
General paralysis	0	
Tabes dorsalis	9	
Disseminated sclerosis	0	51
Amyotrophic lateral sclerosis	0	
Syringobulbia	41	

(3) *Lesions of motor fibres in vagus and recurrent nerves :—*	
(*a*) Intracranial growths at base of brain	0
(*b*) Extracranial growths close to exit of vagus	1
(*c*) Traumatic lesions of nerves in neck :—	
(i.) By horn of bull	
(ii.) Dislocation of clavicle	
(iii. By wagon : consecutive aneurysm of subclavian artery	4
(iv.) Injury in thyroid region	
(*d*) Injury during operations on thyroid gland	14
(*e*) "Traumatic" : either injury or during operation	45
(*f*) Thyroid enlargements and growths	10
(*g*) Pericarditis	0
(*h*) Pleuritic thickening at apex (cf. tubercle of lung)	1
(*i*) Aneurysm of arch of aorta	30
(*j*) Aneurysm of innominate artery	9
(*k*) Aneurysm of right subclavian artery	1
(*l*) Aneurysm of left subclavian or carotid arteries	0
(*m*) Enlargement of heart from mitral stenosis	10
(*n*) Broncho-pneumonia from irritating dust	1
(*o*) Tubercle at apex of lung	11
(*p*) Cancer of lung, with glands	4
(*q*) Enlarged bronchial glands	2
(*r*) Mediastinal growths	10
(*s*) Carcinoma of œsophagus	11
(*t*) Carcinoma of neck	1
(*u*) Peritracheal glands	2
(4) *Peripheral neuritis:—*	
Mineral poisons : lead	3
Vegetable poisons	0
Toxins of acute and other infections :—	
Diphtheria	2
Influenza	1
Rheumatic	1
From "cold"	1
"Toxic paralysis," cause not stated	95
(5) *Inflammatory lesions of abductor muscles :—*	
Injury from swallowing foreign body	3
Injury from washing out stomach	1
(6) *Other causes :—*	
Mediastinitis	1
Tumour of spinal cord	1
Tumour in nasopharynx	1
Left paralysis in right pneumothorax	1
Apical pneumonia	1
"Syphilis of aorta," cured by mercury	1
Pan-sinusitis of nose	1
Distortion of aorta and mediastinum by left-sided lung disease	1
Beri-beri : either toxic, or from cardiac hypertrophy or hydro-pericardium	1
Kypho-scoliosis	2
Poliomyelitis	1
Myotonia atrophica	1
Abscess around œsophagus	1
Following operation for adenoids	1
(7) *Unknown causes*	7
Total	360

Of these, 63 recorded in 1910 by Suder and Dufour are worth notice. Out of the 63, in 7 no cause was ascertained. Of the remaining 56 there were :—

Aortic aneurysm	16*
Thyroid enlargements (generally incomplete paralysis)	7
Operation on thyroid (complete, but often recovered)	11
Cancer of œsophagus (mostly of left side)	7
Cancer of lung	4
Tuberculosis of lung	4
Enlarged left auricle	2
Tabes dorsalis	4
Following washing out of stomach	1
Total	56

* Two of these right-sided, and due apparently to co-existing innominate or subclavian aneurysm.

These probably give something like the relative frequency of the common causes. In aneurysm cases two-thirds were confirmed by an X ray examination. Mitral stenosis resulted in an expanded left auricle which stretched rather than pressed on the recurrent laryngeal. From the point of view of prognosis the frequency of recovery in the neuritic group was of great importance.

Sir FELIX SEMON considered that in tabes both nuclei or nerve trunks might be affected ; he considered his law held good both for nuclear as well as nerve affections. The abductor action of the cords could not be described as analogous to extension of the limbs. The respiratory movement of the cords was bulbar in origin, while phonation was voluntary and cortical. There was no antagonistic action between the abduction of respiration and the adduction of phonation. Organic disease affected the abductors and functional disease disordered adduction ; to this there was no analogue in limb paralysis. Probably the nucleus ambiguus and the recurrent nerve were affected on different occasions in a manner analogous to oculo-motor paralysis which might be either cortical, nuclear, or peripheral. Possibly bulbar paralyses as described were really due to pseudobulbar paralysis ; it was essential to rely only on clinical cases where a post-mortem examination was recorded.

Dr. P. WATSON WILLIAMS supported the view that the nucleus was affected in tabes, and instanced the association of palatal paralysis with abductor paralysis. In tabes interference with the inhibitory fibres of the vagus was the explanation of the high pulse frequency so often observed.

Mr. E. D. DAVIS alluded to the rarity of abductor paralysis in tuberculous disease of the right pleura.

Dr. J. DUNDAS GRANT mentioned the difficulties of mediastinal skiagraphy.

Mr. T. GUTHRIE described certain definite cases of abductor paralysis where the patient recovered—neuritis.

The PRESIDENT described in detail three cases of unilateral abductor paralysis in whom he had observed complete recovery ; influenza played an important part in the causation ; the prognosis was very different in the aneurysmal cases.

The following illustrative cases were exhibited :—

Dr. G. WILLIAM HILL showed a man, aged 24, with Paralysed and Contracting Left Cord of long standing and unrecognised cause. Dr. Hill also showed the Skiagram of a case in whom Sir John Broadbent diagnosed aneurysm by the paralysed left cord and tracheal tugging present, but could discover no physical signs in the chest. The aneurysm was obvious in the skiagram.

Mr. DAVIS brought skiagrams, notes, and cases of (1) Left Recurrent Paralysis (nearly complete), probably due to dilated left auricle, with mitral stenosis, in a patient aged 40 ; (2) Complete Left Recurrent Paralysis following acute endocarditis and pleurisy in a patient aged 19 ; and (3) case of Right Recurrent Paralysis associated with deafness incident after influenza. There are some definite signs at the apex of the right lung ; the patient was aged 34.

Mr. C. I. GRAHAM exhibited a man aged 44 with Left Recurrent Paralysis.

Dr. DUNDAS GRANT showed a microscopical section of Tuberculous Material removed from the petrous bone in a case of unilateral paralysis of palate, recurrent laryngeal, and tongue. His second case showed physical immobility of the left cord in a case of tuberculous laryngitis.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

Demonstration of a Barium Meal.—"Cracking" at the Hip-joint.—Tetanus.—Congenital Occlusion of the Common Bile-duct.—Exhibition of Specimens.

A MEETING of this society was held on May 9th, Dr. C. J. VLIELAND, the President, being in the chair.

Dr. J. DELPRATT HARRIS gave a demonstration of a Barium Meal in a case of Gastro-enterostomy.

Dr. HARRIS also exhibited, in conjunction with Mr. G. G. GIDLEY, a case of "Cracking" at the Hip-joint in a young girl. When first brought to the notice of Mr. Gidley the girl complained of slight pain in the hip-joint and of the cracking noise on walking. She gave a history of slight traumatism, and was as a precaution rested in bed for five or six weeks. No improvement resulted as far as the noise was concerned, and a clanking sound, audible all over a large room, could be heard at each step. This had occasioned so much interest in the neighbourhood where the girl lived that people were accustomed to go to the house to listen to this peculiar sound. A radiograph taken by Dr. Harris revealed no fracture or obvious deformity. There was no shortening. Dr. Harris, however, found that the pelvic measurements pointed to flattening.—Mr. B. DYBALL pointed out that the noise was not produced by passive movements at the joint, and considered it quite possible

that it was under the control of the patient. He quoted the well-known case of a "spirit-rapper" who practised deception by means of sounds produced by movements at the joint of a great-toe.—Mr. R. WORTHINGTON and Mr. C. E. W. BELL were of the same opinion.

Dr. G. H. HANNA reported a case of Tetanus treated by Carbolic Acid Injections. The patient in question sustained a crushed finger on April 1st, 1913, the wound healing in seven days. Fifteen days later, according to the man's story, early symptoms of tetanus were experienced. Dr. Hanna was called to see the patient for the first time on April 19th, when the symptoms of tetanus were very marked, and the case was admitted to the Exmouth Cottage Hospital. A spasm occurred soon after admission and the decubitus was typical. A solution of 1 in 40 carbolic acid, 20 minims, was ordered to be injected hypodermically every hour. During the first 24 hours in hospital 12 spasms were observed, the longest lasting 15 minutes and the shortest two minutes. Bromide of potassium was ordered four-hourly in 2-scruple doses. The spasms were less severe on the following day, but during the night they increased both in duration and severity, and on the morning of the 21st it was found that 26 spasms had been recorded during the previous 24 hours and that the bowels had acted involuntarily. The carbolic injections and bromide by mouth were continued, and there were no further spasms after 6 A.M. on the 21st until May 4th, when coughing brought on a slight spasm. During this interval (April 21st to May 4th) there was stiffness of the affected muscles, the neck being especially affected. Trismus was marked. The carbolic injections were given every four hours for the two days, April 22nd and 23rd, and then omitted, but were resumed hourly on May 4th and continued for three days. No further spasms occurred, and at the present time the man was making good progress towards recovery. Dr. Hanna asked for the opinion of the meeting on the curative effect of carbolic acid in cases of tetanus. As regards the case in question, he considered that the following points were in favour of recovery: (1) the long incubation period (15 days); and (2) the slight pyrexia, 100° F. being the highest recorded temperature. As regarded the injections, the spasms certainly ceased during their employment, but at the same time the muscles remained rigid. During the second series of injections it seemed that the patient was more capable of moving his head and overcoming trismus. Dr. Hanna, in conclusion, said that although an isolated case of this kind proved nothing, he had brought this forward in order that other practitioners might, perhaps, give their experiences of carbolic injections, and if this should show that a valuable remedy could be administered without special manipulative dexterity there would be a great gain to the man engaged in an isolated practice and not within easy reach of either antitoxins or skilled assistance.

Dr. J. A. W. PEREIRA recounted a severe case of Tetanus under his care in the Exeter city workhouse infirmary. Although the spasms were so frequent and violent that recovery seemed out of the question, drugs having no influence whatever on the spasms, improvement set in almost immediately upon the administration of an antitetanic serum injection, and the man eventually recovered.—Dr. HARRIS had had experience of both carbolic acid and serum injections. In his opinion, the severe case died and the mild recovered, whatever the mode of treatment.—Mr. RUSSELL COOMBE recollected cases of his house-surgeon days when the disease was more common. He had formed an opinion then on the danger of giving morphia together with chloral and bromide for combating the spasms. He also alluded to the value of the serum as a prophylactic in the case of wounds where infection with the bacillus of tetanus would be probable.—Mr. BELL remarked that he had yet to find the man who was bold enough to trust to antitetanic serum without calling drugs to his aid at the same time.—Dr. R. V. SOLLY said the value of the serum was incontestable, but the misfortune resided in the latency of the earlier symptoms. Both experimentally in animals and prophylactically in the human being there was ample proof of the curative effect of the injections provided that they were given in time.—Mr. WORTHINGTON was sceptical of the value of any treatment once the tetanic spasm was established. The proof of any cure could only be established where recovery took place in the type of case which otherwise invariably ended fatally.—Mr. W. HORTON DATE related a case which showed that the giving of prophylactic injections was not wholly devoid of risk.—The PRESIDENT said that the issue of the case depended much upon the personal vitality; whereas A had a + resistance, that of B might be much below par.—Dr. HANNA and Dr. PEREIRA replied.

Mr. D. FISHER read notes on a case of Congenital Occlusion of the Common Bile-duct, and showed the liver, pancreas, and duodenum from the same. The child, a female, aged 4 months, was admitted to the Royal Devon and Exeter Hospital, under the care of Dr. William Gordon, with a history of jaundice from the third day of life. On admission the child was deeply jaundiced, and weighed 9 lb. 4 oz. Examination of the thorax revealed no abnormality. Dilated veins were visible over the abdominal wall. The lower edge of the liver was palpated with ease and reached to midway between the xiphoid cartilage and the umbilicus. Traced towards the lumbar region a distinct nodule could be felt, separating it from the spleen, which was also enlarged. The surface of the liver was felt to be distinctly rough. The stools were typical, but not malodorous. Bile pigment was present in the urine. There was nothing to note in the examination of the blood. Diagnosis lay between syphilis, tuberculosis, and congenital obliteration of bile-ducts. A negative Wassermann and a process of exclusion favoured the last-named. The child gradually wasted, diarrhœa was troublesome, and on one occasion there was epistaxis. Perihepatitis and perisplenitis were noted from time to time. Death occurred one month after admission, and the necropsy confirmed the diagnosis. The right and left bile-ducts were markedly dilated, the common duct being represented by a fibrous cord.

Dr. SOLLY showed the following: (1) Cultures and Microscopical Specimens of Cattle Ringworm; (2) Section of Decidual Tissue from a Case of (?) Tubal Gestation; and (3) Section of Adenoma of Prostate.

EDINBURGH OBSTETRICAL SOCIETY.

Retraction Ring as Cause of Obstruction in Labour.—Discussion on Lower Uterine Segment in Labour.

A MEETING of this society was held on May 14th, Dr. J. HAIG FERGUSON, the President, being in the chair.

Professor R. JARDINE (Glasgow) read a paper on the Retraction Ring as a Cause of Obstruction in Labour, in which he said: The situation of the ring marks the junction of the active or retracting portion of the uterus with the portion which is passive and stretches. The part of the uterus below the ring constitutes the lower uterine segment. In an obstructed labour, say from a contracted pelvis, where the lower uterine segment is markedly thinned out and the upper segment well retracted, a sulcus can be seen and felt extending across the abdomen well up towards the umbilicus. This marks the situation of the ring; it may lie transversely or more or less obliquely. If an internal examination be made a ledge will be felt running round the uterine cavity at the upper limit of the lower uterine segment. In some cases it extends completely round, while in others it is not complete. It can be detected by an internal examination before its presence can be made out by palpation through the abdominal wall. Such an internal examination must be made with extreme care when the ring is above the presenting part, as there is great risk of rupturing the lower uterine segment. In ordinary cases of obstructed labour the ring is not the primary cause of the obstruction, but the result of it. The cases where the ring is the primary cause of the obstruction are not so common, but when they do occur they are very much more difficult to recognise and to deal with. Hardly any reference is made to these latter cases even in the most recent text-books of midwifery. 1. In some cases the ring actually forms in front of the presenting part, while in others it forms above the presenting part, just as it does in an ordinary case of obstructed labour. The presenting part may be either the head or the breech. Professor Jardine then gave details of two such cases. One had a contracted pelvis, and after a slow first stage, while the membranes were intact and the head well above the brim, a well-defined ledge could be felt extending round one-half of the cavity. The head could not be pushed into the brim as this ring prevented its descent. A full dose of morphia was given, but there was no relaxation with it after

four hours, so Cæsarean section was performed. The other case was somewhat similar, but the membranes had ruptured. Professor Jardine continued: Dilating bags have been given as the cause of the formation of the ring, but I have used these scores of times without seeing any ring form; and they may also form without any administration of ergot. The ring can be diagnosed by the delay of labour where there is no obstruction, and yet no advance of the head with the contractions, though strong and frequent. There may be a tetanic condition without any relaxation between the pains. On palpating the abdomen the head is felt well above the brim, and it cannot be pushed down. If the abdominal wall is thin the ring can be felt, but with a thick wall it may not be felt. Internally the os will be found dilated and the lower uterine segment opened up, but some three inches up a ledge will be found running round a portion or the whole of the uterine cavity in front of the head. During a pain the ledge does not relax, but it becomes more prominent and prevents the advance of the head. Full doses of morphia have been recommended, but I have not seen any relaxation in a number of cases where it has been used freely. Manual dilatation has been tried, but it is powerless. Hydrostatic bags are useless, as they cannot be inserted high enough. If the child is dead it can be delivered by craniotomy, provided an instrument is obtainable which will enable powerful traction to be made. If the shoulders are caught the clavicles should be cut. If the child is alive Cæsarean section should be performed. 2. In cases where the retraction ring forms above the presenting head the membranes rupture before there is much dilatation of the os. The first stage is prolonged, and by the time the os is fully dilated the ring has formed above the head round the neck of the child. There is no descent of the child, because the shoulders are obstructed by the ring. The condition may be palpated if the woman is not too stout, but the ledge can be felt if the fingers are passed beyond the head. Opiates seem to have no effect in causing relaxation, as also manual dilatation. If the forceps hold it may be dragged through, but they may fail. When the child is alive, then the proper treatment is Cæsarean section, when it will be necessary to divide the ring to allow extraction of the head. When the child is dead craniotomy and powerful traction are necessary; the clavicles may require to be divided. 3. There are cases in which the retraction ring forms in breech presentations. When there is no advance with the legs extended and the breech at the brim, the usual cause is the retraction ring gripping the child behind the knees, so that its feet and legs are hitched above the ring. The membranes rupture early. When a breech is impacted this condition should always be suspected. Traction on the breech by forceps, fingers, or fillets are of little use; a blunt hook should never be used on a living child. The patient should be anæsthetised deeply and the flattened hand passed in carefully in front of the child until a foot is reached, then sweep it inwards over the front of the child and bring it down.

Dr. A. H. F. BARBOUR opened a discussion on the Lower Uterine Segment in Labour. He said: The term "lower uterine segment" goes back to the graduation thesis of Birnbaum in 1841; his observations were clinical and did not rest on anatomical data. The term "ring" came into obstetrics some 35 years later, when the famous German obstetrician Bandl (1876) drew attention to the thickening of the lower part of the uterus (cervix, he considered it) in obstructed labour which made the active part of the uterine muscle stand out in a well-defined edge or ring. "Contraction ring" was introduced by Schroeder in describing his frozen sections published in 1886. It has since been replaced by the term "retraction ring," which is more accurate, as it describes the ring in terms of the permanent retraction of the muscle which persists between the contractions. It was a great advance when the anatomical relations were studied on frozen sections which showed the wall of the genital tract in relation to the fœtus and to the bony pelvis. Unfortunately, the first frozen section, Bandl's classical one (1872), brought confusion into the study of this subject from his labelling a thickening in the uterine muscle with a vein in it as the os internum. On what evidence Bandl arrived at this conclusion is unknown, as Sänger informs us in a paper in 1882. This led obstetricians on a wrong tack. Schroeder rendered this great service that he showed that the retraction ring developed at a higher level than the os internum, and also that it was present in normal labour. His thesis was confirmed by a frozen section described by Professor Webster and himself (1890) which represented the second stage as far advanced as it can be without the child being actually born, and in a case of normal labour. There was no definite line of demarcation between the uterus and cervix. In Bumm and Blumreich's case (1907) there is a retraction ring at the os internum, but the cervix has become abnormally thin posteriorly, and that in proportion to this thinning there is an elongation which we must consider pathological. There are difficulties in an investigation from the anatomical standpoint. The frozen section is of more value than a specimen of the uterus alone. We require to see the uterine wall in relation to the fœtus to eliminate a source of error due to the uterine wall moulding itself on the fœtus. In the first stage the plastic uterus moulds itself on surrounding structures; in the second stage after the liquor amnii has escaped it moulds itself on the fœtus; a post-mortem specimen will show bulgings of the uterine wall corresponding to depressions in the fœtus. Conclusions from microscopical examination of the mucosa have some drawbacks; the os internum is not a well-defined region even in the pregnant uterus; in labour the parts are bruised and the epithelium destroyed. The presence of decidua on the one hand and of the fundi of the cervical glands on the other forms the only data. We may conclude from the study of a great many frozen sections in pregnancy and labour that a retraction ring is not present in every specimen. When present it does not always form at the same point; sometimes it is low down at the os internum, as in Bumm and Blumreich's sections; more frequently, however, it is above this level. We may say, however, that in the majority of cases we find before labour begins that the uterine wall is thinner in its lower part anteriorly, and that when labour sets in this portion does not contract and retract like the rest of the wall. The firm attachment of the peritoneum has been given as marking the upper limit of the lower segment, but this holds good only for the middle line. At the sides this firm attachment rises in a curve towards the insertion of the round ligaments and would throw into the lower segment a much larger area at the sides of the uterus than would be included in it. Professor Jardine has opened up an altogether new aspect of the question. Up to now I have looked upon the retraction ring rather as a ledge, but it has been described to-night more as a distinct ring gripping the uterine contents. It raises the question whether some cases should not rather be described as a spasm of the muscular fibres at the os internum.

Dr. D. BERRY HART was inclined to agree with Dr. Barbour that in the case of the lower uterine segment more importance should be attached to the naked eye appearances. In settling the boundary of the os internum it had to be remembered that there must be variations. He thought the lower uterine segment might be looked upon in relation to the uterine muscle as a tendon to ordinary muscle. One point about the retraction ring was that it acted as a sphincter, and this action was of great importance. Nitrite of amyl had been advocated as a remedy; a pulley with weight at the end of the bed had been reported as having been used for some hours to overcome the obstruction. It was important to remember Dr. Barbour's remark that the retraction ring sometimes formed round a hiatus.

Dr. H. OLIPHANT NICHOLSON thought contraction a better term than retraction. Cases of retraction ring must be rare, since many with large experience did not seem to have met with any examples. The most likely drug, one would have thought, would be atropine or belladonna. He suggested cocaine, which acted extraordinarily on a rigid os when applied on a pledget of wool in 10 per cent. solution.

Dr. JAMES RITCHIE asked whether the retraction ring took place on that part of the uterus where the circular fibres were most developed, and whether that was always at the same place with relation to the os internum. Professor Jardine had detailed a case in which there was no obstruction; the formation of a well-developed retraction ring had always been looked upon as a result of some obstruction.

Dr. J. LAMOND LACKIE had never seen a case of retraction ring before the presenting part. In future cases he would be inclined to search for its presence behind the presenting part. Cases were probably not recognised. He asked whether Professor Jardine had ever seen cases where

the body of the uterus and lower uterine segment remained soft and flaccid, but where there was a marked contraction of the retraction ring. These must be very rare, but were referred to in books.

Dr. JOHN MCGIBBON said he had tried atropine in one case where the spasm subsided in half an hour, but the patient was getting chloroform at the same time. He detailed a case where there was a true retraction ring; no trace of a vaginal cervix could be found, and as there was rupture of the uterus he performed Cæsarean section. The ring formed also round the placenta, but relaxed in a few minutes.

Dr. G. KEPPIE PATERSON referred to the hour-glass contraction mentioned by Dr. Lackie and described in text-books. He believed these were almost all due to the giving of ergot during labour and accordingly were not met with now. He had been called many years ago to a case where ergot had been given during the second stage and where there was a well-marked hour-glass contraction and no special obstruction; forceps slipped time and again, but it ultimately relaxed with long administration of chloroform. He had recently felt the ledge of the ring in an elderly primipara with a prolonged first stage due to rigid os; there was also obstruction due to the enormous size of the child; there was no evidence that the retraction ring caused any difficulty in that case. What was the cause of the retraction ring? It seemed a condition akin to cramp in the legs due to deficient venous outflow. As had been pointed out this ring occurred at the circular vein, indicating that there was some irritating material in this vein setting up a tense spasm in this portion. The application of 10 per cent. cocaine solution was dangerous owing to the risk of absorption incurred and symptoms in patients with an idiosyncrasy to it.

Dr. JAMES YOUNG stated that he had examined Dr. Eardley Holland's specimen and he could clearly distinguish microscopically that the cervical tissue was distinctly present right up to the level of the retraction ring.

The PRESIDENT said that the danger in using nitrite of amyl would be the production of atony of the uterus. He had seen a case where the contraction took place apparently round the child's neck in a breech case; forcible pulling caused a rupture of the uterus, the tear extending right up to the fundus; the patient was moribund when he saw her.

Professor JARDINE, in reply, said that if these cases were not examples of retraction ring they were due to the retraction of something. With regard to drugs, he had not tried nitrite of amyl, cocaine, or belladonna; opium was the only thing he had tried along with deep anæsthesia. Prolonged very deep anæsthesia would relax the ring. He doubted if any of the drugs mentioned would do much unless with long action, and one could not afford the time. He would certainly not do Cæsarean section.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Pole Ligation for Hyperthyroidism.—Intestinal Stasis.—X Ray Diagnosis of Abnormalities of the Intestinal Tract.

A MEETING of this section was held on May 9th, Dr. R. D. PUREFOY, the President, being in the chair.

Mr. W. PEARSON read a paper on Pole Ligation for Hyperthyroidism, describing the histological changes in the thyroid gland which accompany the clinical evidences of hyperthyroidism, and advocating surgical measures in the vast majority of cases. The anatomy of the vascular and lymphatic circulations of the gland was described in detail, special attention being directed to the distribution and anastomoses of the blood-vessels and their relationships, as well as those of the lymphatic vessels, to the capsular investment of the thyroid. A description of Mayo's ligation of the superior thyroid vessels and Jacobson's "pole ligation" was followed by an account of a severe acute case in which the bilateral pole ligation was performed with most satisfactory results. The paper concluded with some observations on technique and after-treatment.—Mr. W. I. DE COURCY WHEELER recalled his experience of treatment in a case considered unsuitable for partial thyroidectomy, which was followed by marked improvement of the condition. In some cases of hyperthyroidism many of the clinical symptoms were often absent until the patient was very far gone. Coffer's blood count in such cases was useful for diagnostic purposes. Wonderful improvement followed partial thyroidectomy in exophthalmic cases. Since it had been pointed out that the wound should be treated as a suppurating one, and drainage in conjunction with liberal use of saline was supplied, the mortality had become inappreciable. Once the bad symptoms had passed off the patient might be said to be well in from three to four days. He had experience of a case of this kind in his own practice.—Mr. A. A. MCCONNELL thought that recent experimental work showed that in some cases in which the arteries were ligatured there was no histological difference, but where the veins had been ligatured there was marked histological difference. It was possible that the ligature of the latter was a more important feature than the former. In cases where both were ligatured the histology was more distinct.—Mr. K. E. L. G. GUNN added his personal testimony to the success of the operation. He did not consider that any surgeon would have attempted an operation for the removal of the gland from a patient in a similar condition. He considered that partial thyroidectomy was safe in early and mild cases, and he would keep the pole ligation for the bad cases.—The PRESIDENT said that these cases had great interest for any one concerned with obstetrics. What the relation was between enlargement of the thyroid and arrested, diminished, or suppressed menstruation he had not a clear idea, but that there was a connexion he was perfectly satisfied. He mentioned cases of his own illustrating this fact.—Mr. H. STOKES and Mr. J. F. L. KEEGAN also discussed the paper, and Mr. PEARSON replied.

Mr. WHEELER, in a paper on the Various Abdominal Angulations and Kinks associated with the term Intestinal Stasis, based his conclusions on a study of 20 recent abdominal cases, and illustrated his remarks with lantern slides. Stress was laid on the association of various intra-abdominal lesions, and he condemned the practice of performing rapid appendicectomy. If an appendix lent itself to rapid removal by its anatomical position and absence of gross pathological changes, either the operation was not justified, or, more likely, the symptoms were equally due to such conditions as Lane's ileal kink or Jackson's membrane. Mr. Wheeler was able to trace Jackson's membrane in direct and unbroken communication with the right margin of the omentum, and he accepted the theory of Gray and Anderson that it was nothing more than the lateral margin of the great omentum pulled out during the descent of the cæcum. The congenital theory as to the formation of this and other bands and membranes forming kinks was satisfactory and comprehensible. Dilatation of the duodenum was often overlooked, and was due to developmental adhesions at the duodeno-jejunal juncture or to a band stretching across the duodenum to the right of the superior mesenteric artery. Jackson's membrane, so far from helping to fix the cæcum, caused a marked kink at the hepatic flexure, with prolapse and dilatation of the cæcum. Cases with slight or marked visceroptosis, with splashing cæcum and diffuse right-sided discomfort or pain, almost invariably had a well-developed Jackson's membrane. The membrane should be divided if it caused exaggerated angulation of the hepatic flexure. Left-sided pain was often due to an exaggerated kink of the pelvic colon, rendered worse in females by implication of the left ovary in the line of fusion between visceral (meso-colic) and parietal peritoneum which caused the kink. A plastic operation on the mesocolon relieved the kink and often cured constipation in the most intractable cases. In enteroptosis the conditions described were most marked. Gastro-enterostomy was often performed without regard to developmental adhesions and obstructions of a congenital kind below the duodenum. Though a simple and rapid operation, it was seldom indicated beyond cases of pyloric obstruction. While the whole subject-matter required discussion, certain points were definitely settled, one of the most important being the definite presence of abnormal angulations and rotations of the gut, the operative relief of which caused the disappearance of symptoms in many obscure abdominal cases.

Dr. MAURICE R. J. HAYES, in a paper on X Ray Diagnosis of Abnormalities of the Intestinal Tract, stated that in all

cases the data furnished by the X ray examination should be carefully analysed in conjunction with the previous history and the subjective and objective symptoms of the patient. Radiography should be employed as an aid to, and not as a substitute for, the ordinary methods of diagnosis. The shadow of a loop of the bowel, viewed obliquely, gave the idea of an existing kink, when in reality the curve might be the arc of a circle not at all sufficient to delay the passage of the intestinal contents. In spasmodic strictures of the œsophagus the bismuth food might be seen to enter the stomach with a sudden rush when the spasm relaxed. In cicatricial stenosis the food passed in a thin stream, and peristaltic movements were violent. In malignant strictures the peristaltic movements in the neighbourhood of the growth were feeble. Reverse peristalsis was often present, and enlarged glands could be observed near the gullet in the posterior mediastinum. A transverse line between the summits of the iliac crests would be the most accurate landmark. In the erect position the greater curvature of what may be termed the "normal" stomach reached this line. Radiography was of doubtful value in determining the presence or absence of gastric ulcers. Adhesions which fixed the terminal part of the ileum to the right pelvic brim could be detected by X ray examination, and the latter was the most valuable method of accurately determining the position of the large intestine. The duodenum was often seen to be much dilated, especially when there was obstruction to the free passage of food into the jejunum, or when there was delay in entering the cæcum.—Dr. FARNHAM and Sir JOHN LENTAIGNE discussed the papers.

SECTION OF PATHOLOGY.

Exhibition of Specimens.

A MEETING of this section was held on May 2nd, Professor A. H. WHITE, the President, being in the chair.

Sir JOHN MOORE showed Organs from a case of Amyloid Disease in a man aged 46. When admitted to hospital the patient was in a state of extreme emaciation. About seven months earlier the right hip began to discharge. The right leg was noticed to be wasted when compared with the left, and the hip showed two discharging sinuses. The pus was thin, watery, and yellow. The liver was much enlarged, hard, and smooth. The left side also was occupied by a large tumour, which at first was taken to be the spleen. Cultures were made from the pus, and staphylococcus aureus was eventually isolated, and the patient was four times injected with a vaccine prepared from this, but without good result. The patient's temperature throughout was subnormal. He gradually sank from exhaustion. At the necropsy the liver weighed 152 ounces. The tumour, which was thought to be the spleen, was found to be the left lobe of the liver. The right kidney was embedded in the right lobe, and the left kidney had moulded itself into the amyloid spleen, which in turn had made for itself a bed in the left lobe of the liver. Here and there over the surface of the liver and kidneys a few miliary tubercles were to be seen, and also in the spleen. The spleen was but slightly enlarged, with mere traces of amyloid material.—Professor METTAM referred to cases of amyloid disease met with in the lower animals, in which cases the syphilitic element had to be excluded. He mentioned that amyloid disease was not at all uncommon in animals used for the production of antitoxic serum, and he suggested that its origin appeared to be toxic. It was remarkable that the amyloid infiltration occurred generally in the walls of the smaller vessels.—Sir JOHN MOORE, in reply, said the intestines were examined, but were not found to be materially altered. The heart was singularly small, but otherwise apparently healthy.

Mr. H. STOKES showed a specimen of Carcinoma of the Pharynx from a man admitted to hospital in a state of delirium tremens. Attention was drawn to the fact that he could not swallow. He had a raised temperature for about a week and then developed a cough with expectoration. Death resulted from pneumonia and heart failure. On post-mortem examination an abscess was found in the larynx and tubercle in the lung.—Professor A. C. O'SULLIVAN said that both lungs were tuberculous; one showed miliary tuberculosis and the other a large focus. The pharynx on the right side showed a large, deep ulcer. It was gangrenous and greenish in colour when fresh. On the opposite side there were two apparently papillomatous growths. The impression from a naked-eye examination was that the ulceration was tuberculous. There was great œdema of the glottis. It was discovered that both sides of the pharynx were cancerous. The epithelial cells were deep down in the fibrous tissue.

Dr. W. BOXWELL exhibited a specimen of Tubercle of the Cerebellum taken from a boy, aged 10 years, the only child of a father dead from phthisis. He was admitted to the medical wards for observation on Jan. 15th last, having a somewhat vague history of headache, vomiting, and defective sight. He was a well-developed, intelligent child, and explained that he had had severe headache at fairly frequent intervals, but that vomiting came on when playing or romping, rather than after food, or when at rest. On physical examination his gait was found to be strutting in character, with some ataxia, but without tendency to reel to one or other side. The jerks were variable, but generally increased, especially in the right leg, and a clonus could sometimes be developed. The plantar reflexes were also variable, sometimes quite active, at other times absent. The abdominal reflexes were present, the right cremasteric generally absent. Nystagmus was marked. Sight for distant objects was bad. There was no complaint of vertigo, no history of fits, and there was no tremor. His hearing was good; his pupils were large and even; tongue normal. On Feb. 1st, after getting out of bed, he became giddy and fell, and about this time he had his first and only attack of vomiting. On the 4th a "lower neuron" paralysis of the left facial nerve set in, followed by deafness in the left ear. At this stage Dr. Euphan M. Maxwell reported "double-choked disc, with atrophy in the left eye." On the 9th he had an attack of convulsions. The diagnosis of a growth, probably tubercular, in the left lobe of the cerebellum, was strengthened by the almost sudden development of dysdiadochokinesis of the left arm. A decompression operation, with a view to saving his sight was now undertaken by Mr. William Taylor, but the child never quite recovered from the shock of the operation, and died two days after. A large solitary tubercle, 1½ inches in diameter, was found post mortem occupying the left lobe of the cerebellum and displacing the right lobe considerably to the right side. The pulse was never below 80. There was no fever. No other evidence of tuberculosis was found.

Reviews and Notices of Books.

Medical Partnerships, Transfers, and Assistantships. By WILLIAM BARNARD, M.A., LL.B., of the Inner Temple, Barrister-at-Law, sometime Scholar of Trinity College, Cambridge; and G. BERTRAM STOCKER, King's College, Cambridge, Managing Director of the Scholastic, Clerical, and Medical Association, Limited. New edition, revised and amplified. London: The Scholastic, Clerical, and Medical Association, Limited. 1913. Pp. 301. Price 10*s.* 6*d.* net.

THE business dealings of members of the medical profession as such may be included under two main headings—those which concern them in relation respectively to their patients and to other members of their own profession. The former are of a simple character and are not likely to lead to serious complications if a reasonable amount of care, combined with an integrity which may be taken for granted, is expended upon them; the latter are of a different kind altogether. The result of any imprudence or neglect of detail may be serious, and even where there has been no lack of foresight disputes between two professional colleagues may entail endless worry and expense to either or both of them, with disagreeable and perhaps useless exposure of their private difficulties in the law courts. The object of Messrs. Barnard and Stocker's volume is to enable medical practitioners to avoid these difficulties, so far as it is possible to do so, when entering into contractual relations with one another, for the purposes of partnership, of transfer of practice, of engaging assistants, or of being engaged as such, and to supply an authoritative text-book for the use of legal practitioners when consulted by

medical men. A solicitor is not likely to have acquired much experience in the course of his practice as to the points to be considered when drafting an agreement of the kind indicated. The law is the same for all, and the contracts of medical men bind them precisely as do those of solicitors or merchants, but a knowledge of the conditions under which the contract is to be fulfilled is essential to him who would provide against unexpected but possible contingencies.

The first edition of "Medical Partnerships" appeared in 1895, and since then a good deal of experience has been gained at the expense of disputants and litigants, which the authors have done well to place at the disposal of others. In particular, simplification and improvement have been possible in the case of the forms of agreement given as models, and in Part II. the comprehensive notes on the law applicable to the subject matter of the book have been brought up to date. The chapter on goodwill has been practically rewritten owing to judgments delivered since the first edition was published, and these include many of a strictly applicable character owing to their having arisen out of litigation by medical men or dentists, besides others in which the goodwill of commercial concerns was under discussion. Among the latter may be recalled that in Trego *v.* Hunt, and the late Lord Macnaghten's definition of goodwill, finely expressed as all his judgments were, in whic he spoke of it as being often "the very sap and life of the business, without which the business would yield little or no fruit," continuing, "It is the whole advantage, whatever it may be, of the reputation and connexion of the firm, which may have been built up by years of honest work or gained by lavish expenditure of money." The notes upon agreements for the restriction of practice and their limitations will also be found to contain modern reviews of old judgments upon a matter in which the law has always taken peculiar interest, and in which the judges of a bygone day were markedly ready to disapprove upon public grounds of the private arrangements of individuals. It may be noted, by the way, that in the case Verdon *v.* Bell[1] recently settled in the High Court after a speech by counsel setting out the facts of an unfortunate dispute between partners, Mr. Stocker's form of agreement had evidently been used, and that discussion was promised, if the case had gone further, as to the application of Clause 17, in which the partners engage to be "just and faithful" each to the other in all their dealings. No doubt to give particulars of lack of faithfulness and justice is not easy when litigation arises, but after all no form of words can eliminate the human element through which harmony or discord arises in the mutual dealings of two members of a partnership. Such a clause invokes, however, the spirit of justice and mutual loyalty without which no partnership can work smoothly. It cannot eliminate or even define the acts which may indicate the absence of that spirit in all conceivable circumstances, but it will at least tend to prevent them, and recourse should be had to Messrs. Barnard and Stocker's handy and well-arranged volume by any who desire to provide, so far as may be, against dangers the exclusion of which cannot be guaranteed.

Zur Klinik der Opsonine. By Professor Dr. Med. ALEXANDER STRUBELL. Jena: Gustav Fischer. 1913. Pp. 228. Price 8 marks.

WHEN the study of the opsonic content of the blood was first introduced in this country by the work of Sir A. E. Wright, and when the fascination exercised by the new technique was such that much of the time of the workers in almost all our pathological laboratories was taken up with it and special opsonic departments were actually established in some institutions, the apparent indifference exhibited towards the new gospel on the continent of Europe was a matter of comment. Now that the first enthusiasm has here subsided and doubt is being felt and expressed as to the measure of real assistance to be obtained from these laborious investigations, we find that the sacred fire here smouldering so dimly has been kindled abroad and is burning with considerable vigour.

The volume before us hails from the Opsonic Laboratory at Dresden, and is written by one who has himself worked in Sir A. E. Wright's laboratory, and has thus drunk at the fountain-head of inspiration. Consequently, he insists on the importance of observing the exact methods followed in the department of St. Mary's Hospital, to which he devotes some 18 pages of text, while the necessary apparatus and manipulations are illustrated both in the text and on plates at the end of the book. The sources of error are next detailed and directions given for avoiding them, the diagnostic and prognostic value of the index is discussed, and a brief note added on the complex nature of opsonins, in which the author follows the views propounded by Gruber. The remainder of the book deals with the use of opsonic indices as a means of control in therapeutic inoculations and with the results obtained by these means in tuberculosis and in staphylococcal affections. Throughout the volume there are given a large number of tables and figures showing the results obtained by the writer and sufficiently proving the careful and minute attention which he has himself devoted to the subject of his study.

As a summary of the accepted doctrine of opsonic investigation the book is very complete and valuable. Probably those who have been led to doubt the possibility of real accuracy in these determinations and the necessity for carrying out the laborious technique involved, will feel that less than justice is done to the objections which have been raised by many writers. This was, however, to be expected in the work of one who is clearly an enthusiast for his subject. On the other hand, we cannot help feeling that the present volume makes little, if any, new contribution to our knowledge in this field, and therefore makes no special appeal to workers in this country who are already acquainted with Wright's researches and have convenient summaries provided for their use.

An Introduction to Dental Anatomy and Physiology, Descriptive and Applied. By ARTHUR HOPEWELL-SMITH, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., John Tomes Prizeman of the Royal College of Surgeons of England; Lecturer on Dental Anatomy and Physiology, Dental Surgeon, and Demonstrator of Practical Dental Histology at the Royal Dental Hospital of London, &c. With 340 new and original illustrations, including a frontispiece in photogravure and 5 plates. London: J. and A. Churchill. 1913. Pp. 372. Price 18*s.* net.

THE first praise given to this work must be for the real beauty of its illustrations. Of the 334 figures in the text and the six whole-page plates it must be said that all are excellent, both in the technique of the original photographs and in their reproduction. Of the text, the portion which strikes us as possessing the greatest merit is that dealing with the anatomy of the teeth of man, for these chapters give an excellent account of human dental conditions, normal and abnormal. This portion is clearly written and excellently illustrated, and in all matters dealing with histology the work has genuine distinction.

A chapter on the history of human teeth as displayed in prehistoric man follows closely the more recent work of Professor Arthur Keith. The theories of the evolution of

[1] THE LANCET, April 5th, 1913, p. 979.

tooth form are clearly and satisfactorily dealt with, as are also the various types of dentition displayed in the different orders of animals. For the hotch-potch of natural history which composes some other chapters we have less praise, and some curious inaccuracies have struck us. In the not very meritorious article on "Darwiniana," proof of the derivation of species is said to be furnished by "Classifications.—Plants are classified as flowering and flowerless; and animals (*a*) those without body cavity, as the *Moneron*, (*b*) those with body cavity, like the sea anemone, (*c*) those with digestive cavity separate and distinct from the body cavity, as the implacental mammals and Man" (p. 119). Classification has proved a pitfall in other cases, for *Triton cristatus* (p. 65) and *Batrachia* generally (p. 71) are classed under the heading of *Reptilia*, and the *Microchiroptera* as a class are said to be "distinguished by the presence of 'nose-leaves'" (p. 315). Upon some zoological facts the author goes astray; the "nude larvæ" of the marsupials are said to pass (as "shapeless masses") "through a tube from the uterus to the maternal pouch" (p. 97). Strange accounts of the habits of some animals are given; of the giraffe it is said that it "carefully avoids damaging the trees themselves" when browsing (p. 57), and of the mole (p. 317) and the pangolin (p. 345) most extraordinary doings are related. Geographically also several slips have struck us. *Galeopitheous volans* is called the "flying lemur of India" (p. 56), the genus *Pteropus* is said to be "found in India, Madagascar, Australia, Queensland, &c." (p. 315), while at p. 333 occurs that frequent misuse of the word "Malay" as the name for some supposed tract of country. The Indian elephant is said to be found "in Malay," and, further on, on the same page, reference is made to the "tapirs of Malay and Tropical America." To the author this lapse may not sound so bad as it does to some people, and it is true that he has had of late the example of many newspaper writers, but the appearance of this slip in a printed book of this standard tempts the reviewer to enter an earnest protest against it.

Some very careless writing has managed to find its way into the book; at page 90 the following sentence occurs: "A cat does not masticate its food, but a dog does, especially of a soft consistency." Passages containing obscure argument also need some revision; for instance, the following, which is found on page 98: "As living depends upon eating, and eating depends upon the efficiency of the teeth, it is not surprising to learn that all kinds of dentitions are found amongst the marsupial animals." An unusually long list of corrigenda is supplied, but even this does not exhaust the uncorrected slips; for instance, on page 353 we presume that "spring ant-eater" should be spiny ant-eater, and on page 314 "Bedhard" should be Beddard.

A great deal of work, a great deal of thought, and an infinite care for the production of beautiful illustrations have gone towards the making of this book; that we have searched it through, and laid hold of some points which to our mind need revision must be taken as an index that the merits of the work and the wide sphere of utility that it is sure to fill demand such a critical analysis from the reviewer.

Nutritional Physiology. By PERCY GOLDTHWAIT STILES, Assistant Professor of Physiology in Simmons College, Boston. London and Philadelphia: W. B. Saunders Company. 1912. Pp. 271. Price 6*s.* net.

THIS book is intended to be used with other books, and in order to profit by it the student must supplement it from other sources, more especially as chemical formulæ have been excluded from the text. Everything else in the book is subordinated to the subject of nutrition, and the student is asked to recognise the possibility of the unending transformation of energy, and to think in terms of molecules. Beginning with the energy relations of plants and animals, the nature and means of nutrition, work of muscles and glands, and reflex action are considered as introductory to what is the main part of the text—the digestive processes as they occur in the alimentary canal. Then follow short chapters on the blood and its circulation and absorption of foodstuffs. Metabolism in its varied aspects is considered, as well as the factors which modify it. The hygiene of nutrition is dealt with in two chapters. A few pages are devoted to alcohol and to internal secretion, and the whole is rounded off with a short account of the nervous system and its higher work.

Apart from the digestive changes which occur in the alimentary canal, the author directs particular attention to intracellular digestion—that second digestion which is an essential feature of the life processes in higher animals. Digestion in the narrower sense is described as a "refining process." The connective tissue ending in the tendon of a muscle is defined as a "harness through which all the numberless minute contractile elements are enabled to unite in their efforts." The length but not the diameter of the intestinal tube is given. The account of the digestive processes is both excellent and suggestive, and shows a comprehensive grasp of the means, end, and conditions of the various and complicated physical and chemical events which make up this process. Nor is the reader burdened with details. The important functions of hydrochloric acid and the preliminary character of gastric digestion are emphasised before intestinal digestion is treated. A full account is given of the researches and bearing of the work of Pawlow and of Cannon. There are passages and statements which require some modification or explanation. Bile is spoken of as having a "bright colour." A villus is described as "filled by a confusing assortment of cells, some of which have been thought to be contractile." Undoubtedly some are. In the diagram of a villus (Fig. 20) the blood-vessels are too far away from the epithelial covering. The author very truly remarks, under the head of nitrogenous equilibrium and *à propos* of gelatin being unable to make good the losses from tissues, "It is useless to increase the quantity of the amino-acids if the variety is not great enough to supply the details of the molecular pattern to be wrought." Under hygiene of nutrition we have an account of what is known as "Fletcherism" and the doctrines of Sylvester Graham, who was referred to by Lowell as an "apostle of bran." Most interesting are Benedict's criticism of those who go to extreme lengths in their championship of reduced feeding, and equally interesting are the remarks on water and meat and vegetarianism. When Erasmus Darwin excused himself from Lenten abstinence on the ground that "all flesh is grass," he perverted scripture, but uttered a physiologic truth. As to alcohol, enough is said to show how various are its aspects. "The hygienic ideal to be striven for is a robustness of life which shall make alcohol superfluous as relish, food, or drug, and a cheerful active mind which needs no artificial aid to keep it hopeful and sympathetic."

The whole text is admirable in tone, pleasantly written, wide and suggestive in its scope, without being burdened by formulæ and unnecessary details, and the teaching is set forth with a literary garnishing which makes its perusal both profitable and attractive to the reader.

Thérapeutique des Maladies Infectieuses. Par les Docteurs M. GARNIER, NOBÉCOURT, NOC, et P. LEREBOULLET. Paris: Baillière et Fils. 1913. Pp. 639. Price 12 francs.

THE treatment of infectious diseases has undergone many changes during recent years. By the side of the antiseptic principle must now be placed immunisation, and with the latter bacteriotherapy and serotherapy. In the volume now before us, which forms one of the excellent series known as the "Bibliothèque de Thérapeutique," an interesting and full

account is given of the latest methods employed in the treatment and prevention of infectious diseases.

The first section is written by Dr. M. Garnier, and deals with some general considerations in reference to the therapeutic measures adopted in connexion with infectious disease. The action of vaccines and sera is briefly discussed. In the second section the treatment of infectious diseases of children is described. The consideration of each disease is thorough and accurate, the varieties of each complaint and the possible complications receiving full attention. Dr. M. Noc is responsible for the section on tropical diseases, and has produced an interesting account of the treatment of cholera, dysentery, Mediterranean fever, leprosy, many maladies due to protozoa, yellow fever, and so on. The infectious diseases of adult age are considered by Dr. Garnier, and the treatment of tuberculosis by Dr. Lereboullet.

This volume will prove of value to practitioners in all countries, more especially, of course, in those in which French is the language used; and it is a good compendium of the treatment of infectious diseases of all varieties.

Lateral Curvature of the Spine and Round Shoulders. By ROBERT W. LOVETT, M.D. Boston, Assistant Professor of Orthopædic Surgery, Harvard Medical School, &c. Second edition, revised and enlarged. With 171 illustrations. London: Rebman, Limited. 1912. Pp. 192. Price 7*s.* 6*d.* net.

IN this, the second, edition the author has found it necessary to rewrite several parts of his work in order to keep pace with the progress made in certain aspects of the subject during the last few years, particularly in regard to etiology and treatment. We are told that the German studies on the relation of scoliosis to school life have thrown a new light on the matter, and the author has added a chapter on that subject. The author declares in his preface that he has made this edition of the book a little less the reflexion of the writings of others and a little more the expression of his own views. The edition is by so much the more valuable.

On page 127 the author crystallizes the whole controversy of exercise *versus* support in the treatment of structural scoliosis by stating that "the *purely* gymnastic treatment of severe structural scoliosis is to-day being largely pursued by two classes of persons. First, by irresponsible masseurs and medical gymnasts, who hold as a tradition that gymnastic exercises are curative or at least helpful in scoliosis, and second, by surgeons who do not believe in corsets or supports. The former class serves only to bring the legitimate use of gymnastics for scoliosis into disrepute; the latter class use the gymnastics more or less effectively, and take a pessimistic view of the results to be obtained in severe scoliosis. Structural scoliosis is a bone problem; a glance at the deformed column indicates that, but it has been too largely considered and treated as a muscle problem. Many well-informed surgeons are deterred from the use of corrective jackets by the fear of inducing muscular atrophy of the back. But muscular atrophy of the back is quickly recovered from, and the deformity is a grave one, demanding measures which strike at the salient feature—the bony deformity." The author states that in moderate and severe structural scoliosis not only may gymnastics fail to do good, but they frequently do serious harm, for the spine is rendered more flexible and if unsupported sinks into a worse position than before and the curve is increased. The assumption made by the advocates of gymnastics that the strengthened muscles will hold the spine in an improved position is not realised, for the flexibility increases much faster than the holding power of the muscles. There is much that is interesting and practical in the paragraphs dealing with the use of plaster-of-Paris.

In Chapter IX. will be found a very clear and brief account of the relation of scoliosis to school life which it would be an advantage for our medical inspectors of schools to read, for it is probable on general principles that unfavourable school conditions are a competent cause of faulty attitude and of slight grades of scoliosis, but that they are the cause of moderate and severe scoliosis is not, in Dr. Lovett's opinion, likely, a view which is in accord with the best modern authorities, but not in accord with former views.

The Britannica Year Book, 1913. A Survey of the World's Progress since the Completion in 1910 of the "Encyclopædia Britannica," Eleventh Edition. Edited by HUGH CHISHOLM, M.A. Oxon., Editor of the Encyclopædia Britannica. London and New York: The Encyclopædia Britannica Company, Limited. 1913. Pp. 1226. Price, cloth, 10*s.*

THIS age of rapid transit and communication constitutes a great handicap to the current value of encyclopædic literature. While the more permanent historical information enshrined in an encyclopædia remains, of course, true for all time, it is constantly being added to, so that the book speedily becomes out of date so far even as the recent and most frequently needed historical facts are concerned. The case is even worse with regard to scientific knowledge of all kinds, to philosophic thought, and to the progress of various forms of human effort. The editor of the "Encyclopædia Britannica" has endeavoured to compensate for this inevitable inherent defect by the present work, which includes a review of the substantial advances in all branches of knowledge from about 1909–10 up to the beginning of 1913. The Year Book is divided into two parts: the first, international and general; the second, national and local. The first part covers in eight sections the following divisions of knowledge: (1) Politics and Economics; (2) Science; (3) Art and Literature; (4) Archæology and Excavation; (5) Philosophy, Education, and Religion; (6) Law; (7) Engineering and Industry; (8) Sports, subjects which have an independent interest irrespective of nationality, or are primarily of common international concern. The second part is in three sections: (1) The British Empire; (2) the United States of America; (3) Foreign Countries. It deals with political, social, and economic progress in each of the different countries of the world, taken as sovereign national units playing a distinctive part in the organisation of human effort and achievement.

On the completion of the "Encyclopædia Britannica" in 1911 it was recognised that the organisation of its individual contributors and advisers, linked up and concentrated as they had been for several years with one another and with the editorial staff, constituted an aggregate of "consulting opinion" too valuable not to be further utilised. What the organisation which had been brought into being for surveying the sum of knowledge up to 1910 had done, it was felt that it might also do in regard to a similar survey of what was new and of special interest for strictly contemporary purposes. Many of these former contributors have taken part in the present work individually, and to their work has been added the work of other authoritative writers in their respective subjects. To enumerate all the contributors to the Year Book is impossible, but we may properly give those connected with the physical and biological sciences. They are: Physics, E. E. F. d'Albe, B.Sc., A.R.C.S.; Chemistry, James C. Philip, M.A., Ph.D., D.Sc.; Biology and Zoology, P. Chalmers Mitchell, D.Sc., F.R.S., F.Z.S.; Botany, J. B. Farmer, M.A., D.Sc., F.R.S.; Physical Anthropology, W. L. H. Duckworth, M.A., M.D., D.Sc.; Cultural Anthropology, R. Ranulf Marett, M.A.; Medicine, Stephen Paget, F.R.C.S.; Dentistry, Edward Cameron Kirk, D.Sc. Among the results briefly summarised by Mr. Paget

under Medicine are anthrax, appendicitis, beri-beri, cancer, diphtheria, diseases of the heart, Mediterranean fever, epidemic cerebro-spinal meningitis, mental disorders, pellagra, phlebotomus fever, the pituitary body, epidemic poliomyelitis, relapsing fever, sleeping sickness, syphilis, tuberculosis, typhoid fever, the question of disease carriers, and vaccine therapy. Reference, of course, is made to the Final Report of the Royal Commission on Vivisection, and its unanimity is emphasised in that while certain "reservation memoranda" were filed there was no Minority Report. Also the Commission's maintenance of the principle that under adequate limitations experiments on animals are morally justifiable and should not be prohibited by law is recalled. The history of the National Insurance Act is briefly told, its main principles summarised (p. 498), and the struggle between the Chancellor and the medical profession mentioned (p. 520) under English Political History. References, with dates, are also made in the index to the principal events connected with the Act—the various protests, prosecutions, the medical meetings, the Plender report, and so forth—a brief statement of particular occurrences being thus easily found in the Diary of Events for 1911, 1912, which precedes Part I. of the book.

Reference is also made to the subject and status of National Health Insurance in France, Germany, Italy, Rumania, Russia, Sweden, Switzerland, and Uruguay, as well as of State Insurance against industrial accidents in the United States, Massachusetts, Ohio, and Washington. A British Obituary, 1910–1912, occupies pp. 538–556. In this connexion (as also for the index) it may be pointed out that the late Mr. Clinton Thomas Dent's name is given as Denton.

The book must be regarded as an essential complement to the "Encyclopædia Britannica," but its utility is not limited to this function. It forms a valuable substantive book of reference for everyone.

The Relations of the Lachrymal Organs to the Nose and Nasal Accessory Sinuses. By Professor Dr. A. ONODI, Budapest. English translation by Dr. DAN MCKENZIE. With 45 plates. London: John Bale, Sons, and Danielsson, Limited. 1913. Pp. 66. Price 8*s.* 6*d.* net.

MONOGRAPHS from the pen of Professor Onodi giving to his *confrères* the results of most thorough and painstaking investigations into the less explored territories of their special department of practice have always received a cordial reception—such a reception is sure to be accorded to his most recent work. This work he modestly sums up as a digest, based upon his own investigations, of the relationship between the lacrymal organs and the nasal accessory sinuses, together with a reference to the etiology and treatment of the diseases of the lacrymal organs of nasal origin. There are, however, further factors which will make a favourable reception of the book more than doubly assured. In recent years the rhino-chirurgical procedures for the cure of disease of the lacrymal efferent passages, by means of artificial nasal openings, have increased in number, and the interest in this important question has been steadily growing. At the same time, it is a matter of common knowledge that the text-books of anatomy, where especially directed to rhinology and ophthalmology, give very little information with regard to the relations of the lacrymal organs to the accessory sinuses of the nose. Professor Onodi's monograph supplies this want in 22 pages of text and 45 plates. The text is given in German, French, and English, making 66 pages of text in all. Facing each plate is descriptive matter also rendered into the three languages. Half of the text is descriptive of the lacrymal organs and their relations to the accessory sinuses of the nose, and half is devoted to the clinical aspect and to the etiology and causal relations of the diseases of the lacrymal organs and those of the nose.

With the exception of one or two slips in terms and names, such as "the radical mastoid operation" for the radical operation on the maxillary antrum, and Mayer for Meyer occurring in the same paragraph on p. 62, the text has been well translated into English by Dr. Dan McKenzie. It is to be regretted that the same attention was not given to the translation of the table of contents, when we might have been spared "lachrymal sack," "clinical party," "window-resection of the nasolachrymal duct by an adult," and "window-resection of the naso-lachrymal duct by an 2 years old child." The translation of the text into French has been undertaken by Dr. Bellin, of Paris.

The plates and their descriptions, however, are excellent, and the work is a reliable guide, not only to the topographical anatomy, but also to the various therapeutic procedures in the region with which it deals.

Hypnotism and Disease: A Plea for Rational Psychotherapy. By HUGH CRICHTON MILLER, M.A., M.D. Edin. and Pavia. With an Introduction by CHARLES LLOYD TUCKEY, M.D. Aberd. London: T. Fisher Unwin. 1912. Pp. 252. Price 5*s.* net.

Dr. Crichton Miller's small volume on psychotherapy is intended primarily for the intelligent lay reader of either sex, though it may be recommended also to the practising physician if he is in search of a book that will give him a general understanding of the subject. It is often a matter of some difficulty to write for the lay public in language at once scientific and not too technical, and Dr. Crichton Miller has acquitted himself creditably in this connexion. All technical terms are defined precisely, and this is the more desirable seeing that the use of them by the author is not always such as is sanctioned by common usage. Agoraphobia is defined on one page as the fear of crowds, but on another as the fear of open places. Suggestion and persuasion are rigorously defined, and the physician should note somewhat differently from the way in which they are employed by Babinski. In the field of action mania is said to be a divergence from the normal to one extreme, and apraxia to the other; this significance of the latter term, we think, is misleading, for apraxia is not synonymous with akinesis. Apart from purely secondary and minor criticisms such as these, we have formed a high opinion of the merits of the book, and consider it calculated to remove many misconceptions of the difficult subjects of hypnotism and psychotherapy.

One of Dr. Crichton Miller's chief contentions is that a vast amount of mental ill-health is the sequel simply of inadequate thought-control, and that the best way to treat such mind-wanderers is by mind-drill, by mind re-education, so as to enable them effectively to "determine their own area of consciousness." His experience has convinced him that this is the only rational method of procedure, and he puts in a plea, both adequate and convincing, for greater resort to mind-drill, *vice* the eternal "rest-cure." He believes that it is not necessary to resort to hypnotism in as many as 50 per cent. of cases calling for psychotherapeutic handling; at the same time, Dr. Crichton Miller indicates the great value of "collective hypnotism," a method comparatively unknown in this country, which, however, he has utilised with conspicuously good results. The chapters on the actual technique of treatment will commend themselves to the medical reader, while the earlier chapters on the history of hypnotism and the phenomena of hypnosis show how a scientific art has arisen on a basis of facts, formerly ill understood if not categorically denied. There

are useful appendices on insomnia and autohypnosis and on the legal aspect of hypnotism.

If the physician wishes to make himself familiar with the scope of psychotherapy in practice he cannot do better than peruse the book under review; he will find no undiscriminatingly enthusiastic vaunting of psychotherapy as the twentieth century panacea, but he may be surprised, nevertheless, at what can be, and has been, accomplished by such methods, and cannot fail to recognise the temperate and critical attitude of the author, who speaks of what he knows and testifies to what he has seen.

LIBRARY TABLE.

Industrial and Manufacturing Chemistry (Organic). By GEOFFREY MARTIN, M.Sc. Bristol, B.Sc. Lond., F.C.S. London: Crosby Lockwood and Son. 1913. Pp. 726. Price 21*s.* net.—This book represents a somewhat ambitious attempt to deal with the applications of organic chemistry to the arts and industries. Seeing how numerous and wide these applications are and how important minute technical details become, a complete treatment of the various subjects could hardly be expected in the compass of one volume. In fact, some of the processes described receive a quite sketchy account, which would be of little information as to technique. The sections on casein and milk sugar are fair examples of this inefficacy, although both products are the foundation of industries which are rapidly increasing in importance. As a source of information in regard to general principles on which methods of manufacture are based, the book undoubtedly fills a useful place. Two valuable features certainly are the full references given to the authoritative work that has been done in all countries, which are prefixed to each article, and the large number of patented inventions quoted. It is also evident that amongst the staff of contributors are those who have an intimate expert acquaintance with the subject about which they have written. One difficulty in attempting to give a complete account of industrial methods is that in so many instances the best information is not available, since there are methods which it is worth the manufacturers' while to keep secret. For general technical information the book, as we have said, fulfils a useful end, and the author may be congratulated on having included within the limits of space at his disposal accounts of practically every industry of importance which is founded upon the chemistry of the carbon compounds.

With the British Red Cross in Turkey, 1912-13. By A. DUNCAN-JOHNSTONE. Sketches by F. LYON. London: J. Nisbet and Co. 1913. Pp. 197. Price 5*s.* net.—The author left London on Oct. 29th, 1912, and proceeding *viâ* Marseilles, reached Constantinople on Nov. 5th. He left for home on Jan. 25th, and published his book, with 32 illustrations, before the end of April. He has therefore lost no time in recording and issuing his experiences and impressions of active service, and makes no pretensions to providing the reader with anything more than a plain account of what came under his personal observation. His duties at first kept him with the hospital established near Seraglio Point, where the wounded were received from the actions at Kirk Kilisse. The condition of these unfortunates, many of whom had received no proper attention since the battle three weeks earlier, was deplorable. Here also he made acquaintance with cholera, which broke out soon after his arrival. A fortnight later No. 2 unit, to which Mr. Duncan-Johnstone was attached, was sent to Lake Chekmedje, where a hospital was established for the reception of the wounded from Chatalja, and then on to Kara Agatch, where a field dressing station was established. Soon after, he returned to San Stefano for duty at the cholera camp, and later to the similar camp at Beikos on the Bosphorus. The murder of Nazim Pasha and Enver Bey's *coup d'état* happened on Jan. 23rd, just before the author's departure. From some plain statements in a few words one may form an idea of the condition of things that existed in the Turkish army. A man, wounded by shrapnel in the back and leg, had dysentery, and had lain on the same stretcher for a fortnight without being touched. At Chatalja hundreds of men were practising elementary drill "with a fierce and tireless enemy a few miles away." A number of patients died from tetanus in the Stamboul Hospital. It was the practice, both of the Turkish soldiers and of the Bulgarians, to file down the bullet point, so that the lead showed through and the bullet became flat and soft-nosed, thus expanding and making a much bigger wound. The author considers that the newspaper correspondent's day in the fighting line is now clearly over, and that his place will be taken by a military officer, who will send properly censored reports. We learn that the fez is now superseded in the Turkish army by an astrachan kalpak. Mr. Duncan-Johnstone appears on the whole to have had a good time. He escaped sickness; he also played the pipes; and he has produced a very readable book, well illustrated by photographs and sketches by Mr. F. Lyon.

Nursery Notes for Mothers. By C. WILLETT CUNNINGTON, B.A., M.B., B.C. Cantab. London: Baillière, Tindall, and Cox. 1913. Pp. 144. Price 2*s.* 6*d.* net.—This little book is much more attractive than one would be led to expect from its title, which gives no indication of the real scope and motive of the book. The author explains in the preface that the term "infant" is applied to children under 2 years of age; those over 2 years he terms "children." In the light of these definitions the chapters on children have very much to commend them; some of them are written with such feeling that the reader realises that they must be based on personal experiences. They show not merely keen powers of observation but a certain facility of expression. The chapter on the single-child family is quite delightful, and some others are also exceedingly suggestive. It would be well if mothers (and one would like to add—fathers) would take even some of the advice offered to them to heart. The chapters on infants are, however, not so happy. Breast-feeding, Dr. Cunnington says, "is becoming less and less common"—an arguable point—but he raises no note of protest against such an abrogation of maternal duties. Rather the alternative suggested is that mothers should be better instructed in artificial feeding. Surely it is this attitude on the part of the medical profession which has exposed breast-feeding to such a charge. Breast-feeding is dismissed in a few cursory remarks, and there is no word in the book as to the various ways of overcoming any of the minor difficulties which are not uncommonly associated with the natural method. Nor can the chapters on artificial feeding be considered satisfactory. To mention a few points: Dr. Cunnington appears to be still under the impression that the so-called "curds" of infants' stools are undigested casein; the recommendations given as to the frequency of feeding and of the quantity of food for the artificially fed infant are based on ideas as to frequency and quantity which are now, fortunately, becoming obsolete. It is regrettable that the book is so uneven, and it is to be hoped that if it reaches a second edition the author will bring to bear the same care and freshness to the notes on infants which he has brought to bear to those on children.

JOURNALS.

Journal of Anatomy and Physiology. Conducted by Sir WILLIAM TURNER, K.C.B., Professor ALEX. MACALISTER, Professor ARTHUR THOMSON, Professor ARTHUR KEITH, and Professor ARTHUR ROBINSON. Vol. XLVII. Part 3. April, 1913. London: Charles Griffin and Company.

Annual subscription 21s. post free.—The present issue of the official journal of the anatomists of Great Britain and Ireland contains an exceptional number of interesting and important articles. Dr. Douglas G. Reid continues his studies of the Arrangement of Peritoneum in the Human Fœtus, a subject which is at present of particular interest owing to the clinical importance which Mr. Arbuthnot Lane and his followers have ascribed to the numerous and varied peritoneal bands and adhesions which are developed during fœtal life and after. Dr. Reid's descriptions are sometimes difficult to follow, and he scarcely does justice to the work of his predecessors. The article of most outstanding importance in this number is a bold effort by Dr. Wood Jones to explain the long series of evolutionary changes which have given man his diaphragm, his pleural and peritoneal cavities, the musculature and skeletal structures of his body wall. The article is a welcome return to the older method of studying structure and function as a common problem, a method which yields results of the utmost importance for the advancement of practical medicine. The issues raised are too varied and wide-reaching to be easily summarised, and several of his conclusions are highly contentious and will certainly stimulate others to further research. We might cite many instances where we think he has drawn just conclusions, but we shall be content with selecting one example in which we regard his reasoning as ill founded—namely, his explanation of why ribs have become reduced to vestiges or have completely disappeared from the region of the neck and loins. Dr. Wood Jones regards the grouping and approximation of the nerves to the upper and lower limb-buds in the embryo as the cause of the disappearance of the costal series in the cervical and lumbar vertebræ. The older, and in our opinion better-founded, opinion is that the ribs disappeared from the neck to permit the head to be moved freely and from the loins to permit free body movements. Dr. Murk Jansen, of Leiden, contributes a brief but, from a physiological and clinical point of view, an important paper on what he names the "distating" and "proximating" groups of muscles in the limbs. Another paper which deserves the attention of all who are concerned with the practical anatomy of the brain is the result of a combined research by Professor Symington and Mr. P. T. Crymble, of Queen's University, Belfast. The authors have reinvestigated the region of the central fissure (fissure of Rolando) in a wide series of brains, and have correlated the results of physiologists and surgeons with their redescription of the anatomical details of the central region of the brain. They regard the so-called genua of the central fissure as produced by two convolutionary buttresses on the motor or ascending frontal convolution—the upper buttress carrying the leg-trunk motor centres, the lower the arm motor centres. They give exact measurements to guide the surgeon to these areas in the living head. The concluding papers are by Dr. W. L. H. Duckworth, who describes a case of Occipital Cephalocele; by Professor J. W. Smith, of Manchester, who deals with certain points in the applied anatomy of the rectum; and by Professor A. M. Paterson on the Varying Forms of the Human Stomach.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

ELECTION TO THE COUNCIL.

ON Thursday, July 3rd, the Fellows of the College will elect four members of Council. Mr. Edmund Owen's second term of office comes to an end then, and Mr. C. H. Golding-Bird's first term will also be completed. Mr. W. Bruce Clarke has recently resigned, and Mr. Clinton T. Dent died last year. Sir Rickman J. Godlee was due to retire this year, but as he will be President on the day of election he will obtain another year of office.

The following list gives the names of the present members of Council:—

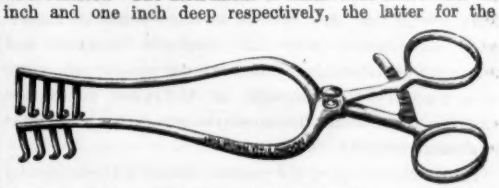
		First elected in
Retire in 1920	Sir Anthony A. Bowlby	1904
	Sir Frederic S. Eve	1904
	Mr. D'Arcy Power	
Retire in 1919	Mr. G. H. Makins	1903
	Sir Berkeley Moynihan	
Retire in 1918	Mr. C. B. Lockwood	1908
	Mr. Bilton Pollard	
	Sir John Bland-Sutton	
Retire in 1917	Sir W. Watson Cheyne	1897
	Mr. R. Clement Lucas	1901
	Mr. W. Harrison Cripps	1905
Retire in 1916	Sir Alfred Pearce Gould	1900
	Mr. W. F. Haslam	
	Mr. W. Arbuthnot Lane	
Retire in 1915	Mr. C. W. Mansell Moullin	1902
	Mr. Charters Symonds	
Retire in 1914	Sir Henry Morris	1893
	Sir Rickman J. Godlee	1897
	Mr. F. Richardson Cross	1898
	Mr. C. A. Ballance	
Retire in 1913	Mr. Edmund Owen	1897
	Mr. C. H. Golding-Bird	

Nominations of candidates for the four vacancies must be received by the Secretary of the College by June 6th.

New Inventions.

A SIMPLE RETRACTOR.

THE advantage and frequent necessity of dispensing with the hand of assistants is acknowledged, and the simple retractor illustrated below has often enabled me to do so with comfort. The instrument is made with claws half an inch and one inch deep respectively, the latter for the deeper wounds. With two of the retractors—one holding open the fat and external oblique, the other the internal oblique and transversalis—removal of an appendix by the muscle-splitting incision can be easily carried out.



The Holborn Surgical Instrument Company, Limited, Holborn-circus, E.C., are the manufacturers of the retractor.

STANLEY BOYD, M.B., B.S. Lond., F.R.C.S. Eng.
Harley-street, W.

A NEW SURGICAL JOURNAL.—In April of this year appeared the first number of the *Revista de Chirurgie*, a journal devoted entirely to surgery; it is published in Bucarest, and it is written in Roumanian. It is true that the number of surgeons in this country who can read Roumanian is not great, but those who can will be interested to learn of this new surgical publication. It is to appear every two months, and six numbers are to form a volume. It is to be issued under the direction of Professor Thoma Ionnescu, and there is a strong editorial committee. In addition to a brief introduction by Professor Ionnescu there are in this number ten papers, every one of which is of interest to surgeons. Among these may be mentioned a paper by Dr. T. Nasta on the Förster-Guleke Operation for the Gastric Crises of Tabes; a paper by Dr. V. Gomoiu and Dr. Titu Vasiliu on a case of Primary Carcinoma of the Scalp with Several Metastases; and one by Dr. M. Cohn on the Treatment of Puerperal Infection by the Intravenous Injection of Collargol. We may also mention a paper on the Operative Treatment of Varicocele, by Dr. V. Gomoiu. It says much for the energy of Roumanian surgeons that this little country, with only some 5,000,000 inhabitants, has issued a journal of surgery. The number is well illustrated, and a coloured plate of malignant disease of the scalp is excellent. The foreign subscription for the year is 12 francs.

THE LANCET.

LONDON: SATURDAY, MAY 31, 1913.

Tuberculin Tests.[1]

ALL research undertaken to attempt the solution of a vexed scientific problem must necessarily touch on many questions not immediately relevant to the subject under investigation, yet such questions will bear essentially on the broader aspect of the case, so that a carefully compiled record of work along these lines will be of great supplementary value. The Royal Commission appointed to inquire into the relations of human and animal tuberculosis has issued such a protocol by Dr. L. COBBETT and Dr. A. STANLEY GRIFFITH in the form of a supplement to the appendix to the final report; it deals with tuberculin tests carried out on the lower animals. With very few exceptions the contents of the volume are based on records that were taken in the ordinary routine at the experimental farms, and they show incidentally how carefully this routine work was done. The Commissioners themselves draw no deductions from these records, but they have happily thought it desirable to place them on record in detailed and largely tabular form, seeing that they bear on so many points of importance in connexion with the tuberculin diagnosis and treatment of tuberculosis; and at the present time there is a tendency to lose sight of the need for further scientific research in the employment of the tuberculins in clinical medicine.

The large variety of the animals tested with tuberculin enhances the value of the work. In addition to numerous observations on normal and infected cattle the tests were carried out on the pig, goat, horse, rhesus monkey, chimpanzee, baboon, mangabey monkey, lemur, dog, cat, rabbit, and fowl. It is of paramount importance to notice that the reliability of the tuberculin test as a diagnostic agent varied considerably in the different species tested. It may be said that the results appear much more reliable in cattle than in other mammals with the exception of the horse. In cattle known to be infected by bovine tubercle bacilli the tuberculin test failed in 31 per cent. of cases suffering from severe and progressive tuberculosis. In cases of general tuberculosis, not of the greatest severity but progressive, the reaction was in every case positive, whilst in general tuberculosis, not severe and not progressive, there were 9·8 per cent. of failures. In cases of minimal or local tuberculosis the percentage of failures was 8·5. An interesting observation was made on fowls infected with avian bacilli which had not reacted to mammalian tuberculin; they were inoculated 11 days later with avian tuberculin and none of them reacted. There is suggestion, therefore, that avian tuberculin is as incapable of evoking a reaction in fowls suffering from avian tuberculosis as is mammalian tuberculin. All such facts go to show how important it is to study minutely the various species of animals and how complex the tuberculin reaction really is. Again, while observing the action of homologous and heterologous tuberculins, the authors found that tuberculin prepared from a type of bacillus different from that which was the infecting agent does not act so constantly as a homologous tuberculin, though the heterologous type is by no means without action. This result does not depend upon the strength of the various tuberculins, but is rather a difference of kind. It is then of importance to know accurately the source of every tuberculin employed and also the type of infecting bacillus. Such investigations should not be neglected when dealing with tuberculosis in the human subject. In Part IV. experiments are quoted to prove conclusively that "old" tuberculin is not absorbed from the alimentary canal, at all events, in the lower animals. By analogy we can confidently say that the same holds good for man. It must, however, be borne in mind that the same result does not hold good for other preparations of tuberculin.

The appearance of these results obtained by careful experimentation on the lower animals is welcome, especially at a time when so much is being said and written on the value of tuberculin in the diagnosis and treatment of tuberculosis in the human subject. A perusal of the clear and painstaking experiments detailed by Dr. COBBETT and Dr. GRIFFITH in the report under notice should serve to remind the clinical physician that he is treading on still uncertain ground when he exhibits tuberculin either for diagnostic or therapeutic purposes. The human subject cannot be compared absolutely with the lower animals in relation to the results of tuberculous infection so far as our present investigations have gone. We need only indicate a few fundamental distinctions. The duration of life and the susceptibility to infection are not identical. Further, other factors require still to be studied in far greater detail than has hitherto been possible—e.g., (1) the problem of predisposition to tuberculous infection; (2) the question of latent infection; and (3) the differences resulting from slight and retrogressive lesions from the standpoint of immunity. We confidently anticipate that experiments such as those of the Royal Commission on Tuberculosis will go far to stimulate further research on the tuberculin reaction in man, and we hope that their opportune appearance before the medical public may help to counteract the present-day loose and largely unscientific attitude towards tuberculin diagnosis and treatment.

[1] A Report on Tuberculin Tests (supplemental volume to the Final Report of the Royal Commission on Human and Animal Tuberculosis), by Dr. L. Cobbett and Dr. A. Stanley Griffith.

Alimentary Toxæmia.

THE Royal Society of Medicine, by promoting discussions upon subjects of general medical interest and urgency, is carrying out in an admirable manner one of the most important functions of such bodies. In focussing general attention upon the obscure and difficult subject of "alimentary toxæmia," and thus endeavouring to give some precision to this much used and abused expression, it has yielded important service to the profession, and we would draw special attention to the records of this discussion, the opening paper of which, contributed by Dr. HALE WHITE,

appeared in THE LANCET of March 15th (p. 754), while the subsequent papers have been, for the most part, abstracted at length in our issues of April 19th (p. 1093) and 26th (p. 1163), and May 3rd (p. 1232), 10th (p. 1310), 17th (p. 1383), and 24th (p. 1451). The great interest taken in the subject is evidenced by the length of the debate, by the number of speakers who took part in it, and by the various points of view from which it was approached—viz., from the points of medicine, surgery, anatomy, pathology, chemistry, and of special departments of practice, such as ophthalmology, dermatology, and dentistry. And throughout this long and broad discussion a high level was on the whole maintained.

The conditions in the alimentary tract from the mouth to the anus so obviously lend themselves to disorders, such as stagnation, fermentation, and putrefaction, and apparently offer such facilities for the growth of micro-organisms and the development of toxins and toxic substances, that it is not surprising that they have been invoked to explain many widely different morbid states, of more or less obscure causation. The danger is that, because disordered states of the alimentary tract coexist with other abnormal conditions, the two may be regarded as causally related upon insufficient grounds. Several of the speakers drew attention to the vague and unsatisfactory connotation of the term "alimentary toxæmia," notably Dr. HALE WHITE in his careful and critical introduction. Dr. F. W. ANDREWES defined it as "the absorption from the alimentary canal of chemical poisons, of known or unknown composition, in sufficient amount to cause clinical symptoms, the blood having served as the channel of distribution to the tissues which are poisoned." Our knowledge of the abundant bacterial flora of the intestines, incomplete as it admittedly is, would naturally lead to careful consideration of this factor in the production of toxic effects from intestinal conditions. Dr. ANDREWES, in reviewing the part played by bacteria, concluded that there is at present little evidence that true toxins derived from the ordinary flora of the gut, soluble or intracellular, play much part in alimentary toxæmia. He suggested that the main effect of bacteria lies in their ability to carry out protein cleavages beyond the capacity of the ordinary digestive ferments with the formation of toxic products, which when in excess the body is unable to neutralise. He also maintained that in a significant group of cases the poisoning is by foreign proteins as such, the defect lying in the liver, which ought to shield the body from their effects, and that with this group bacteria have very little to do. An important aspect of this question, with which several of the speakers dealt, is the part played by the protective mechanisms of the body which exist to deal with the toxins introduced or formed in the alimentary canal. These protective agencies were enumerated by Professor SAUNDBY as the digestive secretions, the impermeability of the mucous membrane, the intestinal mucus delaying absorption, the mutual reactions of different intestinal bacteria, and the so-called antitoxic action of the liver. The rôle of the thyroid as of further protective agency was emphasised by Dr. FREDERICK LANGMEAD and referred to by other speakers. The bacterial evidence of intestinal intoxication was also discussed in a clear and critical manner by Dr. J. C. G. LEDINGHAM, who devoted special attention to the evidence which has been adduced by METCHNIKOFF and his followers in support of the theory of auto-intoxication and the influence of intestinal toxæmia in producing sclerotic changes in the tissues and the involution processes associated with advancing years. Dr. LEDINGHAM does not consider that the results so far obtained lend any very marked support to the thesis. The views of METCHNIKOFF and his school were also adversely criticised by other speakers, and the opinion that indol, skatole, and the phenol bodies do not play any essential part in the genesis of intestinal toxæmia was widely entertained.

The importance of the mechanical factor of stasis or stagnation in the digestive tract in producing alimentary toxæmia was discussed early in the debate by Mr. ARBUTHNOT LANE and by Dr. A. F. HERTZ. Mr. ARBUTHNOT LANE maintained that the conditions of stasis and the consequent infection of the gastro-intestinal contents were due to improper feeding in early life, and subsequently to the prolonged assumption of the erect posture of the trunk. He described the development of bands, mesenteries, or membranes, which, at first serving a useful purpose, afterwards become harmful by leading to kinks and consequent delay or stagnation of the intestinal contents. His contentions were in the main adversely criticised by Dr. HERTZ, who maintained, as a result of his studies by means of the X rays, that intestinal stasis does not lead to gastric stases, to duodenal kinking, dilatation, or ulceration, and that some degree of iliac stasis, upon which Mr. ARBUTHNOT LANE lays much stress, is a normal phenomenon. In regard to this mechanical factor, one of the most interesting and original contributions to the discussion was that of Professor ARTHUR KEITH, who stated that many of the peritoneal adhesions often regarded as pathological in nature were in reality expressions of a normal fœtal process. He urged the due consideration of the function of the musculature of the abdominal wall as the essential mechanism for supporting the viscera, and its prominence in the etiology of visceroptosis. He put forward a strong plea in support of the functional utility of the large intestine, which was supported later in the debate by an amusing contribution from Sir JAMES GOODHART, which has, we know, been read in our pages with much gusto. Mr. ARBUTHNOT LANE'S arguments were also reinforced by various speakers both from clinical experience and from the use and teaching of X rays. It is clear that the discussion as a whole left matters unchanged in regard to this important aspect of the problem, and we find ourselves in complete accord with Dr. HALE WHITE'S judicial and careful summary of the evidence, in which he asks for further confirmation of the X ray findings, and statistical and experimental evidence of the sequence of events claimed by Mr. ARBUTHNOT LANE and his supporters as following intestinal stasis.

While most, if not all, of those taking part in the debate accepted intestinal toxæmia as an established pathological condition, it is somewhat significant that the information forthcoming from the bacteriologists' and biochemical

investigations in regard to the nature of the poisons concerned was admittedly meagre, though in some instances highly suggestive and interesting. Indeed, it is not even yet established whether the condition is due to abnormal products or to the failure to deal with normal by-products and render them innocuous. It appears clear that bacterial agencies are indirectly rather than directly concerned, and that they may act by breaking up the non-poisonous mino-acids formed by protein cleavage into poisonous substances. The nature of these and their mode of origin were discussed by Dr. HALE WHITE, Professor W. E. DIXON, and Dr. E. MELLANBY. The lines of research suggested in their communications would appear to offer a fruitful field for further investigation. In view of the gaps in our knowledge in this respect it is not surprising that few attempts were made to classify the conditions grouped under the general heading of alimentary toxæmia. One form which received very full discussion was that believed to be due to pyorrhœa alveolaris, which was described as the simplest form of the condition. The direct and indirect effects of this condition upon the processes in the alimentary canal were considered at length. An interesting form of toxæmia, which Dr. HALE WHITE regarded as worthy of special study, is that induced by a single simple article of diet, such as the carbohydrate dyspepsia of infants and children. He also suggested that enterogenous cyanosis, in both the methæmoglobinæmic and sulphæmoglobinæmic varieties, is a form from which much information might be obtained if it were commoner. The variety which naturally attracted much attention is that supposed to be due to intestinal stasis, but it is precisely this one upon which, as we have seen, the greatest controversy exists, both in regard to the parts played by the mechanical and bacterial factors.

The symptoms referred to alimentary toxæmia were very numerous and were described and discussed by many of the speakers. Mr. ARBUTHNOT LANE maintained that the autointoxication consequent upon intestinal stasis produces a degeneration in every tissue of the body, and outlined the various conditions which he believes are produced by it, either directly or indirectly. Some very instructive contributions to the debate were made from the standpoint of some special departments, notably in regard to the relationship of diseases of the eye to oral sepsis by Mr. J. B. LAWFORD and by Mr. WILLIAM LANG, and to the connexion between alimentary toxæmia and skin lesions by Dr. JAMES GALLOWAY and other speakers. Mr. LAWFORD, in his critical communication, stated that there was general agreement that the ocular tissues most liable to suffer were the uveal tract and the corneo-sclera. He also stated that recurrent forms of episcleritis and sclerokeratitis had been attributed with reasonable probability to oral sepsis. Mr. LANG brought forward some interesting observations supported by statistics in regard to the same matter. Dr. GALLOWAY discussed the cutaneous indications of alimentary toxæmia, mentioning acute urticaria in its various forms, certain varieties of purpura, and some abnormalities of pigmentation, including hæmochromatosis. In reviewing all the numerous symptoms directly and indirectly attributed to alimentary toxæmia it must be admitted that in some the evidence of their association is very suggestive, if short of absolute proof, whereas in others it is less convincing; and we feel with Dr. HALE WHITE that there is danger lest the term alimentary toxæmia should be used as loosely and unscientifically as "gout" or the "uric acid diathesis." We must await more direct proof in many cases before the association of symptoms can be regarded as proved.

The question of treatment of a group of conditions as yet so ill-defined is, as might have been expected, still a matter of controversy. The rival spheres of medical and surgical methods of treatment have not yet been authoritatively delimited. The medical measures comprise modifications of diet, the administration of aperients, lubricants, and antiseptics, and possibly vaccines. The surgical measures so ably advocated by Mr. ARBUTHNOT LANE comprise removal of the appendix, division of membranes or ligaments, and the fixing the divided ileum into the pelvic colon, taking precautions to avoid the ascent of fæcal matter into the iliac colon. Dr. HALE WHITE regarded the necessity for surgical intervention as a reproach to the medical treatment, and maintained that the condition ought never to be allowed to advance to that extent. The discussion has served to show how much there is still to learn about the pathology, symptomatology, and treatment of the condition. And if it has also served to promote further research, both clinical and pathological, and to lessen the tendency to invoke alimentary toxæmia as an explanation for various obscure conditions on insufficient evidence, it will have fulfilled a very useful purpose.

The National Insurance Act.

PARLIAMENT reassembled, after a three weeks' adjournment for the Whitsuntide holidays, upon Tuesday, May 27th, and it is already obvious that the time before them will be over-occupied. As we write, no exact declaration has been made of the intentions of the Government with regard to the amendment of the National Insurance Act, but it is at the same time very generally understood that the provisions of the measure will be extended in certain directions. It was, for example, understood at the close of last session that, if the report of the committee appointed by the Chancellor of the Exchequer to inquire into the question of extending medical benefit to Ireland made a recommendation to that effect, the necessary amendment would follow, and it is being largely taken for granted that the report will advise this enlargement of scope. Medical opinion in Ireland will not favour the extension unless the contemplated terms are improved. But advantage should be taken of the willingness of the Government to discuss the Act as a flexible measure, as shown in other directions, to bring forward such proposals for the better working of the Act as our experience now indicates should be valuable. It is largely with a view to supplying this information that we are publishing from week to week accounts by our Special Commissioner of the medical position under the Act in various divisions of the kingdom and in

different environments, due to the character of each neighbourhood and the industrial circumstances of the workers.

It stands out clear from our Special Commissioner's reports that the Act is being worked with much more success in some places than in others, and also that the Commissioners have almost boundless discretion, so that to a certain extent to invite Parliamentary interference would be almost unnecessary if the Commissioners were once convinced of the need for any particular reform. The Friendly Societies appear to have recognised this, as in the recent pronouncements of certain officials highly connected with these bodies the necessity for keeping a watch upon the Commissioners is alluded to. For the Friendly Societies find that the Act is disappointing, while they continue to resent the fact that the administration of medical benefits under the Act does not lie with them. Is it not time that those responsible for the management of the Friendly Societies recognised the complete impossibility of any return to the position whereby qualified medical men were held in bondage by medical aid societies? Never again will a learned profession place itself at the mercy of club officials, and the Grand Masters and Directors of these associations, who are still seeking to regain the power and discretion which, when it was theirs, they so often abused, are wasting their time, and are doing harm by keeping alight a spirit of ill-feeling that might well now be allowed to die down.

Annotations.

"Ne quid nimis."

THE CASE FOR THE SMALL HOSPITAL FOR MENTAL DISORDERS.

IT is not so very long since the time when the only idea of the treatment of the mentally disordered lay in their forcible enclosure, and, indeed, the idea is only too apparent in the law which relates to lunacy and in the minds which administer that law. It is only exceedingly slowly that there is emerging the notion that there is, from the therapeutic point of view, no more necessity for the forced enclosure of many persons mentally ill than there is for those who are physically sick. Alongside this notion there has grown a feeling that the establishment of a larger number of institutions, conducted rather as hospitals than as asylums, where the insane can be treated at the earliest stages of their disorders, is highly desirable. We have ourselves long since insisted on the importance of the provision of special beds or wards in general hospitals for the treatment of the insane. There are no reasons beyond those in connexion with space and expense which make such a course impracticable, and we wish we could note some evidence that hospital authorities were even considering the matter. The gain to patients, the general public, and to medical education would be immense. As things are at present the medical and nursing staffs of our institutions are quite inadequate, though satisfactory to the Lunacy Commission, and the individual attention, which is as important in the case of the mentally afflicted patient as in the case of him who has an acute specific infective disease, cannot be afforded. It is only too often that the onset of dementia after attacks of acute or subacute insanity is regarded with fatalistic resignation chiefly because the time necessary for the re-education of the patient cannot be spared. The size of hospitals for the insane is a matter of considerable importance, partly on account of expense and partly on account of the individual patient being, in the large institution, swamped in the multitude of his fellows. In an interesting article which appeared in the *Boston Medical and Surgical Journal* of Feb. 27th of this year by Sir Thomas Clouston we have a careful summary of the advantages of the small hospital. The writer is of opinion that the small hospital is preferable to the large one which accommodates many hundred patients, and in which the medical officer can hardly know even by name his many patients. He lays much stress upon the importance of the human relationship between the physician and the patient, and upon the tendency in the large institutions to a deteriorating and hardening effect on the minds of the physicians who treat the patients they cannot study medically, and of the lay officials through their coming into daily contact with vast numbers of demented people. Sir Thomas Clouston further points out that the cost of caring for patients in the smaller institutions is no greater than in the larger. The day of the enormous asylum is over. We believe that before many years have passed the present institutions will have become merely refuges for the hopelessly feeble-minded and demented, while the less demented will be boarded out, and the acutely ill will be tended and nursed in smaller hospitals adequately staffed both by medical officers and nurses.

MEDICINE IN THE "MABINOGION."

IT is curious that in the "Mabinogion," or fourteenth century collection of classic Welsh tales, of which several are prehistoric in origin, there should be so few and such vague allusions to the physician's art. Skilled leeches are referred to more than once, especially in the case of Owain. There occurs, too, some account in the tale of "Peredur the Son of Evrawc" of a jousting accident, in which the knight Kai, known to readers of Tennyson, is struck on the jaw, and suffers a fracture of the shoulder-blade, while his arm is broken, and he is ridden over by his enemy 21 times. During fever, we hear of his saying sarcastic things, but we are not told of his treatment, though a "leech" is sent him by King Arthur. A wound from Kai's sword, we are informed elsewhere, no physician could heal, but again we lack details. The Mabinogion's silence as to surgical procedure is the more remarkable, seeing that a tradition of medical knowledge was long preserved by the Druids and Bards. Pharmacology had its origin in prehistoric times, such as those to which the oldest Mabinogi refer, when bronze, and then iron, came into use. But of the knowledge of herbs and simples there is no detailed account in these most ancient traditional writings, though we read in one place that an extremely expensive balsam is applied to the region near Owain's heart when he is supposed to be dead or dying. He revives, and the owner of the balsam expresses annoyance at its having been all used up. "And the maiden came to the Countess," runs Lady Guest's translation, "and gave the flask into her hand. 'Ha, maiden,' said the Countess, 'where is all the balsam?' 'Have I not used it all?' said she. 'Oh, maiden,' said the Countess, 'I cannot easily forgive thee this; it is sad for me to have wasted seven-score pounds' worth of precious ointment upon a stranger whom I know not. However, maiden, wait thou upon him until he is quite recovered.' And the maiden did so, and furnished him with meat and drink, and fire, and lodging, and medicaments, until he was well again. And in three months he was restored to his former guise, and became even more

comely." Numerous accounts of enchantment occur in the Mabinogion, and of these some are therapeutic, as, for instance, when in the Ireland of the Iron Age dead soldiers are cast into a cauldron, whence they arise completely healed save that they are deaf. Connected with magic, too, is the pathetic history of Queen Goleuddydd's puerperal mania and death in childbed, which, however, casts no light on the medical knowledge of the Ancient Britons. One or two points may be noted in the Mabinogion which throw sidelights upon the history of the national physique and hygiene. Constant mention is made of washing before meals. We do not remember such cleanliness in the Teutonic "Eddas." Carousals are the order of the day after meals, but the joy of conversation is always also mentioned. Though Celts seem mostly to belong to a dark-haired race, nearly all the constant references to hair in these writings are to auburn, red, or yellow tresses. The sense of colour is particularly vivid among the ancient Celts; hence, perhaps, their affection for vivid hair. This exceptional colour-sense has been commented on both by Matthew Arnold and J. R. Green. As freedom and business-like qualities, including a love of fair play, come to us from the "lumbering Saxons" of Carlyle's satire, as well as a certain solidity and staying power, so imagination and art, and also "nerves," may be ancient British.

COUNTRY VERSUS TOWN ORIGIN OF TYPHOID.

THE disputed question of the relative importance of town and country as factors in the propagation of typhoid fever has been put in a somewhat new light by Dr. Charles F. Bolduan, assistant to the general medical officer of the Health Department of the City of New York.[1] As the result of a careful analytical study of the sources of typhoid infection in New York City Dr. Bolduan concludes that "taken altogether over half of the typhoid infections occurring in the city of New York are of *rural* origin." Dr. Bolduan discusses the contrary view of the origin of typhoid fever—viz., that it has mainly an urban source, which has been widely held, and quotes a recent paper by Sedgwick, Taylor, and McNutt, in which it is stated that "the question at issue is simply whether, in proportion to the population, typhoid fever is more prevalent over rural or over urban areas." He points out that such a statement of the case leaves entirely out of account the enormous difference in the relative significance of typhoid fever in the city and in the country. Since practically all water- and many food-supplies, such as milk, green vegetables, and so forth, come to the city from the country, and since typhoid fever is a disease conveyed principally through the medium of water and food, Dr. Bolduan argues that the occurrence of one case of fever in the country far outweighs in significance that of one in the city. He asks, "Have we not seen a single case of typhoid fever on a dairy farm give rise to over 300 cases of the disease in this city?" He therefore contends that typhoid fever in cities may be largely chargeable to rural infection, even though typhoid mortality rates are much lower in rural than in urban districts. There is undoubtedly weight in this contention; but it must not be overlooked that both food- and water-supplies may become infected, not only at their point of origin, but also during the handling they subsequently receive in the processes connected with distribution. While, therefore, the sources of supply may demand greater vigilance than they at present have, there must be no slacken'ng of vigilance over the methods of distribution. It is possible, moreover, that the danger of contamination at the source may be greater for American cities than for the principal European ones. This appears to be suggested by Table II. of Dr. Bolduan's paper, which shows the death-rates from typhoid fever per 100,000 of population between the years 1890 and 1911 in five large European cities—Berlin, Hamburg, Vienna, Paris, and London—as compared with those of five large American cities—viz., New York, Boston, Chicago, Washington, D.C., and Philadelphia. While there has been a progressive drop in the typhoid fever death-rate of each group during recent years, the latest rates of the American cities are still very considerably higher than those of the European cities. This can hardly be due to defective urban sanitation, considering the efficient status of sanitary administration in the large American cities of to-day, and in particular the care exercised by the health authorities in those cities to prevent the contamination of food, by regulations forbidding such exposure of foods as is customary in London. It would seem, therefore, more likely that food becomes contaminated largely at its point of origin.

[1] The Rural Origin of Much of the Typhoid Fever in Large Cities and the Need of Reorganising Rural Public Health Administration. New York: Department of Health. Reprint No. 3.

"CHLORIDE OF LIME" IN SANITATION.

THERE appears to be a movement in favour of returning to the time-honoured "chloride of lime" for purification purposes. At all events, bleaching powder is now being used in many countries with marked success for the sterilisation of water-supplies and sewage effluents. It is also being employed in many other directions in which the action of a powerful germicide and deodorant is needed. It is strange that "chloride of lime" fell into disrepute, but probably the sickly smell which it gives off in use counted against its popularity. The fact remains that it is, next to corrosive sublimate, the most effective germ destroyer we possess, and its use is highly economical. Corrosive sublimate is, of course, unsuitable for many purposes; it is poisonous, it is an albumin coagulator, and it is expensive. The various phenol derivatives are not deodorisers, and their use in water-supplies or sewage effluents is impracticable. It is often overlooked that "chloride of lime," or, as it should be called, calcium hypochlorite, acts as an oxidiser and not as a chlorinator, with some exceptions, so that it becomes a cheap source of oxygen, a bleaching agent, a germicide and deodoriser. There are, further, no proprietary rights in regard to it, although, of course, many large firms are interested in its sale, and there are also rival processes for producing it. All these considerations, however, mean that a cheap and efficient product is at our disposal. We have read with much interest a recently published account[1] of the many applications to which "chloride of lime" is being successfully put. Amongst these we find, in addition to the sterilisation of water-supplies and sewage effluents, its use in street sprinkling and flushing, in epidemics, in general sanitation, as a disinfectant on the farm, in the railway carriage, and in the extermination of vermin and pests, and particularly the loathsome house-fly. It would seem that in the past the application of "chloride of lime" has not been carried out on scientific lines. It has been used in indiscriminate quantities, very little attempt hitherto having been made to obtain the strength of the solution just sufficient to accomplish its germicidal task. The quantity for the purpose in a number of instances is quite small. Recently an instrument called a chlorometer has been devised[2] which indicates the amount of available chlorine in the liquid flowing through

[1] Chloride of Lime in Sanitation. By Albert H. Hooker. New York: John Wiley and Sons; London: Chapman and Hall. 1913. Pp. 231. Price 12s. 6d. net.

[2] Siemens Brothers and Co., Limited, Woolwich, Kent.

it. The introduction of such an instrument is of the greatest importance in connexion with the use of chlorine sterilisers on account of the economy which it is calculated to effect, by ensuring a regulation of the chlorine strength so that this may be sufficient to sterilise, avoiding an excess which might have disagreeable consequences, especially in regard to water-supplies. The chlorometer was devised by Mr. E. K. Rideal and Mr. Evans, and its working principle depends upon the depolarising action of chlorine. Many metals when immersed in a liquid together with a platinum rod, which is joined to them outside the liquid by a wire, show a tendency to enter into the solution and force out at the platinum a constant supply of hydrogen. While this continues an electric current is sent along the wire. Zinc is a metal of this type, and on that account is commonly used as the "fuel" of primary batteries. The electrolytic solution pressure of copper—i.e., its tendency to force out hydrogen—is, however, too small to cause a permanent evolution of this gas, and so a copper-platinum couple fails to furnish a current. When, however, minute traces of chlorine (oxidant) are present in the water these can combine with the hydrogen as it is formed, and so make possible the formation of more, and therefore the copper will continue to dissolve and a permanent current to flow. It is simply the depolarising action of the chlorine which renders the copper and platinum an active couple. The measurement of the current gives at once the amount of active chlorine present, and this can be controlled with a precision and convenience which are desirable in the application of chlorine or other ox disers to the sterilisation of water-supplies. The applications of chlorine for the purpose are so satisfactory that with this means of measuring its amount they are sure to be extended. Mention may be made of its use in the treatment of sewage effluents, of the water employed in laundries, of that used in textile finishing to inhibit growth of algæ which cause stains, of water in swimming baths to keep it clean and to prevent the formation of objectionable slimes, to show the value of the procedure. The apparatus is, however, somewhat costly, while there has for long existed a simple chemical test (iodide of potassium and starch) which hardly requires the services of a trained chemist to perform. The chlorometer, however, provides a means of constant control and is automatic in action.

THE AFTER-HISTORY OF PREMATURE CHILDREN.

AN inquiry as to the after-history of premature infants is naturally beset with many difficulties. It is necessary, first of all, to establish the fact that the infant was really premature, by no means always an easy task, and then to determine the factors, hereditary or acquired, which have interfered with its development. In an endeavour to throw some light upon this problem Dr. Georges-Raoul Détré has carried out a series of observations[1] over a period of 14 years upon 205 premature infants, controlled by a series of similar observations upon infants born at full term and in the same social state. Among the infants brought to the dispensary at which this investigation was undertaken premature delivery had occurred in only 4·9 per 100, and this figure compared with the normal frequency of premature births in lying-in maternities of about 30 per cent. shows the heavy mortality which is met with among these children—a mortality which reaches its maximum of some 48 per 100 in twin births. In the investigation of the nature of the chief causes of these premature births Wassermann's reaction has proved of considerable value, and has enabled the large rôle played by the poison of syphilis to be established. Whether this is or is not the principal factor in producing the premature birth it is undoubtedly of very great importance in its influence upon the future development of the premature infant. Dr. Détré's observations show that in a considerable number of cases such conditions as feeble powers of digestion, deficiency of intellect, and hydrocephalus are so constantly associated with a positive Wassermann's reaction that their relation must be more than a mere coincidence. The influence of the syphilitic poison appears also to have been proved by him in a case of Little's disease and in certain dysplasias. In the same way, although meningeal hæmorrhages are the commonest result of trauma inflicted during labour, yet syphilitic lesions also may play a predisposing part in these cases. In patients in whom the syphilitic poison has become somewhat attenuated it may reveal its presence merely by interference with the normal growth of the infant. In a certain number of cases the systematic practice of Wassermann's test will reveal the presence of the syphilitic taint, and an energetic antisyphilitic treatment may prove of great utility. Dr. Détré also calls attention to the large part played by tuberculosis in interfering with the growth and development of premature infants. In the children of tuberculous parents as well as in those of syphilitic parents he has on many occasions observed rickets in its most severe forms. His researches have led him to the conclusion that not only does prematurity interfere with the normal growth in weight, but that it also produces a stunting in height, only 8 to 10 per cent. of premature infants comparing favourably in their growth with healthy infants of the same age born at full term. The comparison of premature infants with those born at full term in the same surroundings seems to show that this result is independent both of the environment and of the influence of heredity. The same results have been found by Dr. Détré among premature infants born during the course of the ninth month in conditions similar to those which obtain in cases of the induction of premature labour, and these observations, in his opinion, demonstrate that the induction of premature labour is prejudicial, not only to the individual, but also to the race. It is therefore of the utmost importance that every means should be adopted to shield the pregnant woman from all possible causes which may prevent her reaching full term, and in this connexion Wassermann's reaction will form a very valuable adjunct to the practice of puericulture in the future. In the same way, even after birth, while due care will often enable a premature child to overcome the disadvantages inseparable from its prematurity, yet if a Wassermann reaction is positive the prognosis should be certainly a guarded one.

[1] L'Avenir des Prématurés. By Dr. Georges-Raoul Détré. Paris: Steinheil. 1912. Pp. 154. Price 7 francs.

THE MEDICAL DEFENCE UNION.

WE have received the annual report of the Medical Defence Union, which testifies to the continuance of the valuable work carried on by the executive body. In addition to the ordinary duties which devolve upon the officers, questions arising under the National Insurance Act have figured prominently in the year's work, and the Union has been instrumental in aid of its members and of the profession in general in obtaining official ruling on various points. For instance, the decision of the Commissioners exempting resident medical officers of hospitals whose remuneration does not exceed in value £160 a year from the operations of the Act was obtained as a consequence of the intervention of the Union on behalf of various members who were directly affected. It is highly probable that many points will continue to arise in connexion with the Insurance

Act which will cause extra duties and calls upon the Union. There has been no diminution of the ordinary work, and, as usual, the report of the solicitor (Mr. W. E. Hempson) forms very interesting reading. The society can be congratulated on a most successful year, and the members should be properly grateful to the council and to the secretary (Dr. A. G. Bateman) for their efforts on their behalf. The membership of the Union is now very large, but notwithstanding the heavy calls upon its funds prudent management has enabled a substantial reserve fund to be built up and added to yearly. The expenses during the year have shown a marked decrease, particularly in regard to the law costs, so that the financial position of the Union is stronger, while the action which it has taken of late in the prosecution of unqualified practitioners and the suppression of unauthorised practice is as useful to the medical profession as its defence of individual rights.

THE EMETINE TREATMENT OF AMŒBIC DYSENTERY AND HEPATITIS.

LAST year Professor Leonard Rogers, of Calcutta, introduced a new treatment of amœbic dysentery and hepatitis—the hypodermic injection of emetine, the active principle of ipecacuanha. He used this to obviate the vomiting produced by the large doses of ipecacuanha, the drug necessary. He found that on placing a piece of mucus containing numerous active amœbæ in normal saline solution the organisms were rendered inactive and apparently killed by a solution of emetine as weak as 1 in 100,000. In an article contributed to our columns[1] he stated that ½ grain doses of hydrochloride of emetine administered hypodermically once or twice daily rapidly relieved the acute pain and tenderness of amœbic hepatitis and stopped the fever, while if suppuration had not occurred the leucocytosis soon disappeared and the patient became convalescent. In dysentery he obtained results much better than those of ipecacuanha. The average duration of the ipecacuanha treatment up to the final disappearance of blood and mucus from the stools in patients who recovered was 11·4 days, of the emetine treatment 2·35 days. Other observers have recently confirmed the value of this treatment. At a meeting of the Académie de Médecine of Paris on Feb. 25th Professor A. Chauffard reported a case of dysenteric abscess opening into the bronchi in which rapid recovery took place. The patient was a healthy man, aged 21 years, who in August, 1911, while taking part in the French expedition in Morocco, contracted dysentery. There were 30 glairy and sanguineous stools daily. He was treated with serum and enemata of nitrate of silver. In October, 1911, he returned to France much improved but not cured. In March, 1912, he was sent back to Africa, and immediately after arriving the dysentery became active. He returned home in June weak and emaciated. On the 23rd, without any special pain, he expectorated some chocolate-coloured sputum. On the following day he expectorated about half a litre of this material. The expectoration continued except for a remission from August 22nd to Sept. 15th. He was admitted into hospital under the care of Professor Chauffard, very pale and emaciated, with a temperature ranging from 98·6° to 100·4° F. The liver extended four finger-breadths below the ribs. There were dulness and absence of vocal fremitus and respiratory sounds at the base of the right lung. Above this area there were subcrepitant and sibilant râles. The expectoration consisted of pus of the colour of rhatany, and amounted to 500 c.c. in the 24 hours. Radiography showed that the diaphragm was immobile on the right side and that its internal two-thirds were lost in the base of a triangular shadow. The leucocytes numbered 49,000, of which 77 per cent. were polynuclear. Examination with the sigmoidoscope showed diffuse redness of rectum and sigmoid flexure, an ulcer of the size of a 50-centime piece in the rectum, and at a distance of 8 to 10 cm. from the anus and cicatricial bands. Under rest, appropriate diet, and enemata of dermatol, he improved, but there were always two or three badly formed stools in the day, the expectoration did not fall below 250 c.c. in the 24 hours, and the evening temperature was 100·4°. Six subcutaneous injections of 4 centigrammes of emetine were given—one on Dec. 21st and 22nd, two on the 23rd, and one on the 24th and 25th. Neither nausea or other ill effects were produced. On the first day of the treatment the expectoration fell to 150 c.c.; on the third day it was 60; on the fourth 45; and on the fifth there were only three "crachats"—the last which were seen. After the second injection the sputum became less hæmorrhagic and the temperature normal. Radiography showed that the hepatic dome had regained its normal contour and that the base of the lung was clear. Thus in five days a hepato-bronchial fistula of five months' duration was cured. At a meeting of the Société Médicale des Hôpitaux of Paris on April 11th M. S. Costa reported a case of amœbic abscess of the liver cured by the same treatment, but aspiration was also performed. In the *China Medical Journal* for March Dr. J. Preston Maxwell has reported 10 cases of amœbic dysentery treated with great success by injection of emetine. Before its use he used to dread the arrival of these cases; now he welcomes them from the point of view of expecting a speedy good result from treatment. The following is an example. A woman, aged 38 years, had subacute amœbic dysentery for over a year. She was passing daily 10 to 15 stools, mostly composed of blood and mucus. On Sept. 21st, 1912, 0·01 of a gramme of hydrochloride of emetine was injected; on the 22nd, 0·02; and on the 25th, 0·01. On the 23rd all blood had disappeared from the stools, on the 25th most of the mucus, and on the 26th the stools were solid for the first time since the beginning of the illness. She left hospital fat and well.

[1] THE LANCET, Oct. 19th, 1912, p. 1062.

THE ACOUSTIC PROPERTIES OF THE STETHOSCOPE.

IN the *American Journal of the Medical Sciences* for February Professor Henry Sewall has called attention to the drawbacks of certain modern stethoscopes which are designed with a view to make the sounds as loud as possible. This is inaccurately termed "magnification," but it really consists in adding resonance to the original sound and thus modifying it, for the various component tones are not equally increased. The chest wall also acts as a resonator for sounds produced inside the chest. As long ago as 1897 Professor Sewall showed how these mural vibrations might be eliminated by pressure on the chest-piece of the ordinary binaural stethoscope. This damps the mural vibrations. Thus the powerful, resonant voice heard when the chest-piece is applied lightly is turned into a flat, feeble, and distant sound when the instrument is pressed firmly on the skin. This effect is much more marked below the level of the fourth rib. Above this the vibrations of the air in the trachea and large bronchi penetrate more or less directly and are not annulled by stethoscopic pressure. The sounds heard in the lower part of the chest thus contain a much larger proportion of sympathetic mural vibrations. This is demonstrated by the fact that pressure annuls the normal inspiratory murmur over the lower part of the chest, but not over the upper. When not annulled by pressure the normal breezy murmur is rendered sharper, more bronchial, and higher in pitch. Hence the view that this murmur owes its pitch, volume, and qualities chiefly to sympathetic vibrations of

the chest wall. Professor Friedrich Müller has shown that it is only low notes which evoke resonance of the chest wall.[1] Therefore when a high note is voiced pressure on the chest-piece of the stethoscope alters it little, but with a low note the resonance is damped and the pitch and quality are altered and the intensity diminished. It must be noted that this effect is not obtained with a rigid wooden stethoscope. Pressure of this on the chest wall will damp vibrations, but their energy is transferred to the stethoscope. The same result is obtained with a binaural stethoscope in which the ear and chest are connected by a solid medium such as a spiral wire; but a binaural stethoscope with rubber tubes and a bell which is thick-walled and has a high fundamental note is not sensibly affected by damping vibrations.

THE TREATMENT OF CYSTITIS WITH IODINE VAPOUR.

IODINE was not isolated until 1812, and 15 years later an attempt was made to employ the vapour in the treatment of pulmonary phthisis, though with little success. At various other times iodine vapour was used in the treatment of disease, and especially it was employed in 1888 by Delie for chronic otitis media, and about the same time Hamonic, of Paris, succeeded in curing some resistant cases of gonorrhœa by the insufflation of the vapour of iodine. Several others have experimented in the same direction, and lately the vapour of iodine has been employed in the Necker Hospital of Paris, and Dr. Gaston Farnarier has taken the therapeutic application of iodine vapour in cases of cystitis as the subject of his graduation thesis. The method employed was to decompose by heat some iodoform contained in a small glass vessel. The application of iodine vapour to the interior of the bladder is not really painful, but occasionally it produces some irritation for a few hours after the application, and the author suggests that the cause of this is that in the decomposition of iodoform other substances than iodine are set free, possibly some bromine or chlorine arising from impurities present. The apparatus employed consists essentially of a glass flask with a capacity of about an ounce; this has three openings—by one of these the iodoform is introduced, and another ends in a conical tube which can be attached to a catheter. When a flame is applied to the flask the vapour of iodine is set free, and it is driven by means of a small force-pump into the bladder through the catheter, the presumption being that as the vapour has only to travel about two feet from the vessel in which it is formed, it reaches the wall of the bladder without complete condensation. The vapour is allowed to act on the bladder wall for a few minutes—about three minutes on the average—and then the catheter is withdrawn. The treatment has been employed in 19 cases, and details are given of all these in the paper. Dr. Farnarier has come to the following conclusions: that the treatment should not be employed in mild cases, and, in fact, only in those cases which have not been cured by the ordinary means. He urges that the vapour should be used in all cases when the ordinary means fail, especially if there is any reason to suspect the presence of the tubercle bacillus.

THE President of the Royal Society has received from the Portuguese Legation subscriptions amounting to £21 5s. forwarded by the Society of Medical Science of Lisbon as a donation to the Lister Memorial Fund. A sum of 867 dollars has been collected by Dr. W. W. Keen, F.R.C.S., of Philadelphia. Further donations intimated from foreign countries include: University of Paris, 500 francs; University of Lyons, 100 francs; Société de Chirurgie of Lyons, 100 francs; Faculty of Medicine of the University of Munich, 100 marks; Faculty of Medicine of the University of Breslau, 110 marks; Stockholm Medico-Chirurgical Society, £5; *Münchener Medizinische Wochenschrift*, 200 marks; and Naturhistorisch-Medizinischer Verein, Heidelberg, 50 marks. A donation of £10 has been received from the University of Calcutta.

[1] THE LANCET, March 8th, 1913, p. 674.

SOME SURGICAL EXPERIENCES DURING THE BALKAN WAR.

BY SIDNEY SMITH, M.R.C.S. ENG., L.R.C.P. LOND.,
LATE SURGEON TO DR. CLEMOW'S HOSPITAL FOR WOUNDED, CONSTANTINOPLE.

DURING my stay of 11 weeks at the British Hospital in Chichli, a suburb of Constantinople, under the directorship of Dr. F. G. Clemow, physician to the British Embassy, I had under my care in all 110 Turkish soldiers, a very large proportion of whom suffered from either bullet or shrapnel wounds. We had also several cases, more or less convalescent when I arrived early in February, of spontaneous gangrene of the feet, which was a prominent feature of the early stages of the war, when the half-starved peasant soldiers sat for days in the damp trenches, their legs tightly swathed in unyielding putties, to which they were unaccustomed, and their feet encased in ill-fitting "Blücher" shoes; but it is with the wounds, the result of rifle and shrapnel bullets, and more especially with those involving the thorax, that I propose now to deal.

Bullet Wounds.

First, as regards gunshot wounds in general, in which category I include all those wounds due to projectiles, they could be divided into two main classes: (1) Bullet wounds (rifle); (2) shrapnel wounds. The first type of wound was generally comparatively trivial and altogether lacking in serious complications and sequelæ, whilst sepsis and more or less serious results were almost invariably connected with the second. The wound inflicted by the Mannlicher bullet with its high velocity may be extremely grave and accompanied by great laceration of soft and hard tissues if inflicted at very close range, while awkward results often attend the spent bullet when its long axis has ceased to coincide with the line of flight. But either of these contingencies was, in our experience, rare, at any rate during the closing stages of the war; and whilst the bullet seldom remained in the tissues (this happened in only two cases in our series, clean entrance and exit wounds being found in most cases), it often happened that considerable deviation of the bullet's course through the body occurred, so that important and vital structures such as the heart and great vessels, lying in the direct line between the wounds of entry and exit, often remained apparently unharmed. An interesting point was that the patients could almost invariably say which were the wounds of entry and exit respectively, even when the bullet had traversed such a small organ as the finger, and they could in most cases differentiate between wounds inflicted by rifle and by shrapnel bullets. The accuracy of their remarks was generally corroborated by our personal observation. With the exception of those wounded in the head few suffered severely from shock, and one man who had received five more or less severe wounds was able to walk into the hospital the day after they were inflicted, and was discharged cured in a week.

Shrapnel Wounds.

Shrapnel wounds, as we found them, could be subdivided into two main classes: 1. Those inflicted at close range and attended with severe laceration of soft parts and some splintering of bone. These almost invariably became septic, though often of a very mild and local type, and constituted by far the worst and most troublesome wounds with which we were called on to deal. 2. Those in which the patient was some little distance from the exploding shell. In these cases the spherical bullet had lost a great part of its initial velocity. The wound of entry was usually circular, of about the size and shape of a halfpenny, and with ragged unhealthy margins; the bullet was frequently retained in the tissues,

and there was a certain amount of sepsis around it if any extraneous pieces of hair, clothing, or the like, were carried in with it, as so frequently occurred in our series. The bullet was often easily palpable, lying just deep to the deep fascia 9 inches or more from the wound of entry. In addition to these superficially lying bullets I extracted one from a patient's knee-joint, which luckily had not become septic, and in another case the bullet was found amongst the deep muscles of the thigh. I found on cutting down to the bullet that there lay immediately in front of it the circular piece of skin with clothing and hair attached that the bullet had pushed along in front of it from the wound of entry. What vistas of possible transplantation dermoids this opens up! This latter type of wound followed much more closely the course of the ordinary rifle bullet wound than did the first class of shrapnel wound, and inasmuch as owing to the low velocity bone was seldom seriously implicated, the cases did quite well when the foreign body was removed.

I used to wonder on noting the great essential differences between the two types of shrapnel wound whether the first could have been inflicted either by the "nose" of the shrapnel or by a portion of the burst and disrupted casing; but it was so seldom one failed to find the casing otherwise than intact on the field of battle that one was forced to the conclusion that the remarkable variety in the character of the wounds was caused rather by proximity or the reverse to the bursting shell than by any essential differences in the character of the projectile. Stones and other débris hurled far and wide by the shell bursting close to the ground undoubtedly accounted for some of the severer wounds, as did fragments of common shell. Such shells, however, seem to have been but little employed at Tchatalja.

There was one other type of wound that occurred with tolerable frequency, caused by the bursting of small hand grenades in the hands of those who carried them. These caused a large number of superficial blackened blisters, each containing a minute fragment of metal and spread more or less evenly over the body, rather than any serious injury, although one of our patients had his thumb amputated and lost the sight of one eye as a result of his experiments in this direction. One batch of patients were admitted, all of them covered in these small blisters, as the result of one of their number having tried to open a small cigarette-shaped hand grenade with his pocket-knife to see what it contained.

As I have stated above, complications and sequelæ of a serious nature were as rare amongst those placed *hors de combat* by bullet wounds as they were common amongst those whose injuries were inflicted by shrapnel. Many of our earlier cases, however, were received some 10 to 15 days after they had been wounded, the wounds having been dressed only once or twice during the interval. In cases such as these, bullet as well as shrapnel wounds often underwent a mild type of infection, leading in many cases to marked brawny œdema of the limb, which in at least two cases was increased by the tight bandaging which those in the field hospitals had thought necessary to stop the initial hæmorrhage. Even when this œdema was so marked as to suggest the possibility of gangrene supervening, no incisions were found necessary, raising and fomenting the limb being all that was required. With the exception of a few cases such as these, we found that the field dressings had been exceedingly well applied, the bandaging standing well the strain of the patient being jolted from field to base, and in no single case did we find the wounds uncovered on arrival at our hospital.

Wounds of the Thorax.

I will now pass on to the main subject of this article—namely, bullet and shrapnel wounds involving the thorax, with special reference to those involving certain nerve trunks. I have taken nine such cases, eight bullet wounds (entry and exit) and one shrapnel wound.

CASE 1.—Wounded at Katakji on Feb. 9th. Bullet entered just below centre of right clavicle, escaping at posterior edge of right scapula. Taken on a stretcher to field hospital; stayed there one night; then on a stretcher to Ak-Bunar, there one night; thence in closed cab to Hademkeni, there three nights; thence by train to Sirkedgi station (Stamboul). Admitted to Chichli Hospital Feb. 14th, apparently little the worse for these vicissitudes. Patient said he coughed up blood at the time of injury and that blood escaped profusely also from wounds of entry and of exit. Still occasionally coughs up blood. Lost power of movement of right hand immediately after injury. Bullet wound of right side of chest, implicating right lung and right brachial plexus. *Entry*, clean, circular, scabbed wound, just below centre of right clavicle. *Exit*, posterior edge of right scapula 2½ inches external to spine of fifth dorsal vertebra. Wound healed; *general condition fair*: patient suffers from severe paroxysms of coughing, during which he brings up a little bright blood. Physical examination reveals bronchitic sounds in right upper lobe. Right arm in a state of almost complete flaccid paralysis. Tendon jerks absent. All voluntary movement at shoulder in abeyance. Assisted movement at this joint is well performed and with perfect mobility. No pronation or supination at wrist possible. Flexion of fingers and approximation of thumb to little finger fair. Marked impairment of tactile and pinprick sensibilities (former absent) on radial side of arm, back and front from elbow down, including thumb and outer half of second digit. Some impairment, though considerably less marked, on ulnar side. Slightly impaired sensation of upper arm and right side of chest and shoulder. Patient's lung signs cleared up very rapidly during the next few days, but he complained of very considerable neuritic pain of an intense burning character in right side of chest and down his paralysed arm, which was aggravated by the massage and passive movements he was receiving as treatment. During the next few weeks I massaged and instituted passive movements for his arm, which had to be kept swathed in wool as he complained of cold in it. At the end of six weeks his arm was very considerably better, he was getting some movement in his wrist, and there was no sign of contraction or stiffness in the joints. He was discharged on March 26th to continue at his home in Asia Minor the treatment he had received with us, with the addition of faradism, which we could not provide.

CASE 2.—History similar in all essentials to that of Case 1. Two small healed wounds. Wound of entry half an inch behind posterior border of sternomastoid about its centre. Wound of exit one inch to the left of the spine of the first dorsal vertebra. General condition good. No lung signs nor symptoms. Left arm in a state of almost complete flaccid paralysis. Nutrition good. All assisted movements at shoulder and elbow-joints good, but no voluntary movements possible. Slight pronation and slight flexion at wrist possible. No supination. Flexion of fingers fair. Can be performed against resistance. Scapular movements good. Patient can approximate his scapulæ (rhomboids). All forms of sensibility impaired in affected arm. By Feb. 27th considerable improvement had occurred. Flexion at wrist quite good. Some attempt at extension, both of wrist and of fingers. Slight supination at wrist possible. There was considerable neuritic pain in left side of chest and left arm, which compelled the discontinuance of the massage and passive movements with which I had been treating him. By March 21st his arm had recovered sufficiently for us to discharge him to continue treatment at home.

I have described these two cases together and in detail because of the obvious and extraordinary similarity that existed between them, especially as regards their nerve involvement. The patients arrived together, had been wounded in the same battle, fighting side by side in the trenches. They both developed exactly similar neuritic pains and improved at the same rate. I imagine that in both cases contusion and concussion rather than division of some of the brachial nerve trunks had occurred. For in the latter event it would have been six months, rather than six weeks, before any appreciable improvement could have taken place. The thought crossed my mind that the men might be malingerers, who had put their heads together *en route* and worked out a course of campaign to hoodwink the English doctors, but I am now convinced that such was not the case.

CASE 3 was chiefly interesting by reason of the near proximity of the wound of entry (fourth rib, anterior axillary line) to the heart, the bullet escaping in the right mid-axillary line over the ninth rib. If this bullet had, as some authors declare all modern rifle bullets do, pursued a perfectly straight course between the wounds of entry and exit, the patient's heart must have been penetrated. I prefer to think that the bullet was a spent one, which kept close along the ribs, and that only near its point of exit, where some dry pleurisy and friction sounds occurred, did it dive down to the deeper structures. The patient declared—and these peasant soldiers were not given to lying—that he perceived the bullet to traverse his person and then stretched out his hand and picked it up as it lay half buried in the ground by his side, putting the *objet d'art* in his pocket as a memento of the, to him, momentous occasion.

CASES 4 and 5 had no particular point of interest. They both suffered from hæmoptysis for several days after admission and developed slight bronchitic râles in the injured lung.

CASE 6 differed from the two previous ones by having some nerve involvement, as in Cases 1 and 2. Wound of entry to the outer side of, and immediately below, left acromion. Wound of exit inner border of left scapula three inches below its spine. No lung involvement. All movements of the left arm well performed up to the horizontal; above this level voluntary movement was impossible, and the attempt was accompanied by winging of scapula. In this case it must have been the nerve to the serratus magnus that was involved. No improvement had occurred in this patient at the time of his discharge.

CASE 7 was interesting in that the surgeon at the field hospital had enlarged the wound of exit (ninth rib anterior axillary line) and removed the bullet. Wound of exit was found unhealthy, with considerable discolouration around. No very definite lung signs. On Feb. 19th, four days after admission, he developed a septic temperature and had many rigors, his general condition being bad. The wound kept unhealed and unhealthy. No lung signs beyond some dry pleurisy. He continued to run a septic temperature for the next fortnight, suffering from frequent rigors. He developed rib retraction and diminished breath sounds at the right base, with relative rigidity of the right rectus. Some frictions heard at right base. By March 5th he had developed a rapid dicrotic pulse (144) and air hunger, but on the next day his signs and symptoms abated and he made an uninterrupted recovery, and was discharged cured on March 15th.

CASE 8 was chiefly interesting in that some three weeks after his wounds had healed the patient developed a hard, brawny swelling, which I took to be a gumma behind and attached to his left sterno-clavicular articulation in the direct line of the bullet. My impression is that in this case the bullet had simply sowed the soil for a gummatous growth. Nothing abnormal was seen with the X rays and the tumour reacted to potassium iodide.

CASE 9 was wounded at Kastaukeui on March 24th and admitted into hospital on March 26th. Wound of entry small and circular in posterior aspect of right shoulder. No wound of exit, but patient complained of considerable pain in right axillary region. Patient ill and collapsed on admission, but able to walk. On March 27th his general condition was worse; he complained of constant pain in his axillary region. Breathing was shallow and rapid (36-40). Pulse feeble and rapid (120). Temperature up to 102·8° F. on previous night. Constantly expectorating a quantity of muco-purulent sputum tinged with blood. Little coughing. *Physical signs.*—right lung, breath sounds difficult to hear all over this lung. Expiration prolonged, with many deep rumbling râles. Over the base some sharp crackles heard. Slightly diminished resonance on percussion. March 28th: Patient much worse. Respirations 40, pulse failing, thirst great. Still a quantity of blood-flecked but perfectly sweet purulent sputum. March 29th: Temperature suddenly dropped by crisis to 97·6°. Pulse fell from 116 to 88; respirations from 36 to 20. Patient exhausted but better. From this time onwards patient's general condition rapidly improved, some transitory dysphonia alone remaining. Being stung by curiosity we took him to the Hamidieh Hospital near by and had him "screened." The X ray showed a shrapnel bullet embedded in the left lung, posterior to the centre of the clavicle. Needless to say no attempt was made at removal.

The chief interest in these wounds of the thorax seems to me to lie, first, in the comparative frequency of nerve trunk complications in our series, all of which improved perceptibly without any attempt at nerve suturing; and, secondly, that the policy of leave well (or ill) alone, as applied to these chest wounds, is the best policy, and that only in those cases where empyema or some similar complication calling for urgent surgical measures is present should any active interference be undertaken.

INCIDENCE, DURING 1912, OF NOTIFIABLE INFECTIOUS DISEASES IN SANITARY DISTRICTS.[1]

A REPORT has recently been issued by the Local Government Board, giving particulars of the local incidence of certain infectious diseases in England and Wales during 1912. This section has been prepared by Dr. Arthur Newsholme, the Board's medical officer, but a further section has been added from the pen of Dr. R. Bruce Low, giving a preliminary statement as to the occurrence abroad of small-pox, plague, and cholera.

The present report is the second of a new and highly important series, the first number of which, relating to the year 1911, was reviewed in these columns shortly after its appearance.[2]

Sickness Statistics in 1912.

In the document before us statistics are given of the cases of infectious diseases notified in 1912 in each sanitary district of England and Wales. The corresponding report for 1911 contained the first complete record of the kind, and was made practicable by the Board's general order of the previous year, which imposed upon all extra-metropolitan medical officers of health the duty of returning to the Board the number of infectious diseases notified in their districts in each successive week.

Full particulars of these cases for 1912 are contained in the tables appended to the present report, but as returns of these cases have already been published by the Registrar-General it is unnecessary to refer to them now in detail. It is, however, worthy of note that in 1912, a year characterised by a summer of unseasonable coolness, the usual autumnal excess of enteric fever and diphtheria almost failed to appear, but that with respect to scarlet fever the difference between 1911 and 1912 was much less marked.

Commenting on the first number of this series we questioned the advisability of publishing rates showing the proportion of attacks per 1000 living for the several sanitary districts of England and Wales, the population being in many cases very small. From the present report it would appear that a similar view is entertained at Whitehall. Thus Dr. Newsholme remarks that although, for convenience of reference, the rates for all districts have been given, it is evident that in judging of their significance reference should always be made to the population and to the number of cases of sickness on which each rate is based. It is unnecessary to labour the point that the epidemiological and administrative value of the rates will rapidly increase with the possibilities of comparison with past years.

Extensions of Compulsory Notification in 1912.

On Jan. 1st, 1912, all cases of pulmonary tuberculosis became compulsorily notifiable under the General Order of the Local Government Board. By a previous General Order (dated November, 1911) cerebro-spinal fever and acute poliomyelitis had been made compulsorily notifiable. In some districts the notification of certain other infectious diseases was temporarily required by the sanitary authorities, powers for this purpose having been readily obtained from the Local Government Board. Thus measles, whooping-cough, chicken-pox, ophthalmia neonatorum, epidemic diarrhœa, anthrax, hydrophobia, and glanders came temporarily under the notification clauses in specified districts of the country.

Pulmonary Tuberculosis.

From the year 1912 onwards pulmonary tuberculosis, whether occurring in private or in public practice, became compulsorily notifiable everywhere under the Local Government Board's Order dated November, 1911. Very wisely, in our opinion, the Board refrains from publishing the actual number of cases of this disease existing in each sanitary district. This has been avoided because comparisons likely to be based on such statistics would often be erroneous or mischievous. For several years to come comparisons, especially for small areas, will be liable to error, and, speaking generally, are to be deprecated. In this connexion it is well to remember that tuberculous patients habitually migrate to certain districts, especially health resorts, their illness having been acquired elsewhere. And further, it is well known that the extent to which notification is effective must always depend on the relation of the local medical officer of health to his professional brethren.

Small-pox, Plague, and Cholera Abroad in 1912.

In this report there appears for the first time a section containing an interesting account of the occurrence abroad of one or other of these diseases. This section, which is contributed by Dr. Bruce Low, is published for the special information of medical officers of health of ports and other localities from which danger is likely to occur. It is not intended to supersede the fuller statement which will be contained in the forthcoming annual report of the Board's medical officer. In recent years the chief danger of small-pox in this country has arisen from the importation of infection from abroad. Consequently it has been thought advisable to keep medical officers of health supplied with this information in order to draw attention to some of the ascertained sources of imported infection. Dr. Bruce Low's report on the occurrence of this disease in various parts of the world is necessarily incomplete, since it was written early in 1913, before the full reports for the previous year had come in. The figures here given are therefore put forward provisionally and are subject to revision on receipt of the complete returns from the several foreign countries. Dr. Bruce Low's preliminary statement as to occurrence of plague and cholera throughout the world during 1912 forms instructive reading.

[1] Public Health Reports. N.S. No. 78. Octavo, pp. 77. London: Wyman and Sons. Price 9*d*.

[2] THE LANCET, May 4th, 1912, p. 1209.

THE SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE (1913).

SECTION OF RHINOLOGY AND LARYNGOLOGY.

THE President of this section is Sir StClair Thomson and the acting secretary Mr. Douglas Harmer, 45, Weymouth-street, London, W.

As in other sections, the mornings will be devoted to discussions. The following subjects have been selected:—On Thursday, August 7th, Professor Killian and Professor Jackson will report on Endoscopic Methods as Applied to the Larynx, Trachea, Bronchi, Œsophagus, and Stomach. On Saturday, August 9th, the subject is Indications for, and Relative Values of, Tonsillotomy and Tonsillectomy, on which Professor Burger and Dr. Goodale will report; and on

Tuesday, August 12th, Professor J. Ferreri, Dr. H. Marschik, and Dr. E. Lombard will open a discussion on the Pathology and Treatment of Malignant Growths of the Nose and Naso-pharynx (fibroma to be excluded). The remaining two mornings, namely, Friday and Monday, August 8th and 11th, will be devoted to a joint meeting with the Section of Otology. On the former day Professor Gerber and Dr. André Castex will introduce a discussion on the Methods and Results of Treatment of Diseases of the Throat, Nose, and Ear by Salvarsan and other Arsenical Compounds; and on the latter day Dr. Victor Delsaux and Dr. E. W. Goodall will report on the Special Treatment of the Throat, Nose, and Ear during the Active Stages of Certain Infectious Fevers.

When the arrangements for the Congress were first considered the question arose whether Laryngology and Otology should continue to be divided or should be united in one section. The former plan was adopted, but it was arranged that the transactions of both sections should be supplied to members of either, that they should have conjoint meetings, and should be in close contiguity. They will both meet in the Central Technical College and their theatres will only be separated by a passage.

In connexion with the Section of Laryngology a department has been arranged in the General Pathological Museum to illustrate the following three groups of diseases: (1) Neoplasms of the nose, accessory sinuses, and naso-pharynx (excluding mucous polypus); (2) the rarer forms of laryngeal tumours (including post-cricoid carcinoma); (3) diseases of the trachea and bronchi. There will be an exhibition of instruments to illustrate recent improvements in broncho-œsophagoscopy, and the committee is prepared to arrange for a limited number of short demonstrations in the museum at stated hours. Members who desire to lend material for exhibition are requested to communicate with Dr. Dan McKenzie (62, Brook-street, London, W).

Invitations will be sent to all foreign members who register their names in the Congress. An excursion to Oxford on Sunday, August 10th, will also be arranged. Visitors will be asked to pay their own expenses, amounting to about 10*s*. 6*d*. per person. It is possible that the numbers may have to be limited. Gentlemen wishing to give private entertainments of any kind during the Congress are asked to notify the secretary of the entertainments committee, Mr. Cecil Graham, 17, Upper Wimpole-street, London, W., in order that there shall be as little clashing as possible. The visitors who require hotel accommodation are advised also to communicate with Mr. Cecil Graham, who will supply all details.

SECTION OF OTOLOGY.

The proceedings of the Section of Otology will be the subject of a separate account. The afternoon sessions will be devoted to papers offered by members of the section. The President of this section is Mr. Arthur Cheatle and the acting secretary Mr. Sydney Scott, 130, Harley-street, London, W. Mr. J. S. Fraser, Mr. G. J. Jenkins, and Mr. Patrick Dempsey are also secretaries. It has been stated that this section is closely connected with Section XV. (Rhinology) and that a subscriber to either receives the transactions of each. Joint discussions on (*a*) the Methods and Results of Treatment of Diseases of the Throat, Nose, and Ear by Salvarsan and other Arsenical Compounds; and (*b*) Special Treatment of the Throat, Nose, and Ear during the Infectious Fevers will, as there mentioned, be held. The other mornings will be given up to discussions on (*a*) the Pathology of Deaf-mutism, on which Professor Alfred Denker and Professor Holger Mygind will report and Professor Siebermann will give a demonstration; (*b*) Non-suppurative Diseases of the Labyrinth (reporters: Professor G. Alexander and Professor Karl von Eicken); and (*c*) Climatic and Occupational Influences in Diseases of the Ear, introduced by Dr. Clarence Blake and Professor Gradenigo. In addition an extra discussion has been arranged for Surgical Anatomy of the Mastoid Region. This will be held on Wednesday afternoon, August 6th, and will be opened by Professor Mouret. The afternoon sessions will be given up to independent papers.

There will be a museum connected with this section which will be devoted to illustrating by specimens, transparencies, and other exhibits, the anatomy, physiology, pathology, and surgery of the labyrinth. Members who desire to lend material for exhibition are requested to communicate with Mr. W. M. Mollison, secretary, 48, Brook-street, Grosvenor-square, London, W.

The section will hold a dinner in combination with Section XV. (Laryngology) at the Hotel Cecil on Tuesday, August 12th, at 7.30, and will also join in the excursion to Oxford on Sunday, August 10th. Tickets for the dinner can be obtained from Mr. T. Mark Hovell (105, Harley-street, London, W.), at the price of £2 2*s*.

THE FINAL REPORT OF THE ROYAL COMMISSION ON UNIVERSITY EDUCATION IN LONDON.

VI.[1]

THE remainder of Part III. of the Report, which so far has dealt with the immediate needs of the several Faculties of the University as regards salaries for the principal teaching posts and the more urgent requirements of the libraries and laboratories, is devoted to the general consideration of University Fees, to the machinery for the coördination of the Faculties, to the constitutions and powers of the Court, the Senate, the Academic Council, and Convocation, and to the site and area of the University. In respect of the various authorities of the University, it will be convenient to consider these in the last article of this series when dealing with the summarised recommendations of the Commissioners.

University Fees.

With regard to these the Commissioners find that:—

The fees charged for full-time students in the institutions recommended for inclusion as constituent colleges are so much higher than those charged in the other institutions connected with the University that it might be said that true university education would be available only for the more well-to-do. It may justly be argued that students in London should not be called upon to pay more for a university education than those of corresponding means in provincial universities. No system of scholarships and free places would meet the difficulty.

The variation in the fees charged at polytechnics for a full three years' course for day students is very considerable, and tends to a belief that the difference lies, not in the character of the course, but in a social distinction. Any organisation of the University, based, or appearing to be based, upon a segregation of students according to wealth, is disastrous to one of the most important social purposes for which a university exists. If a university is built up of colleges, some cheap and some expensive, either the cheap colleges give an inferior education or receive a larger share of aid from endowments or public funds. Both alternatives are objectionable.

Report A of the Academic Council advocates the equalisation of fees all over London as the ultimate ideal, but unless the London colleges can attract large endowments like the University of Manchester, or receive about the same proportion of aid from public funds, no great reduction in the present fees is possible. The low fees charged in the Faculties of Laws and Economics constitute no argument; practically all the students in laws are part-time students, and the School of Economics, where nearly all the teaching in that subject is given, received in 1910–11 nearly 30 per cent. of its income directly or indirectly from the London County Council.

The percentage of income derived from fees at various colleges proves that any practicable reduction in fees would not reduce the London percentages to those of the provincial colleges.

The establishment of uniform fees for the universities and a determination of their proper amount should be made part of a general consideration of the national provision for university education, a matter beyond the Commission's reference.

The fees in the constituent colleges and university departments should be reduced to an average annual fee of £15 for the full degree course in Arts, £20 in Science, and £30 in Engineering.

The cost of reducing the fees of full-time matriculated students in the several constituent colleges is next considered:—

It is estimated that the total cost of reducing the fees for full-time matriculated students in the constituent colleges would require an additional income of about £13,500.

If the East London College were to be included as a constituent college in any faculty the uniform university fee should be charged, but a bursary sufficient to reduce it to a net sum of £10 10*s*. should be awarded to each student genuinely resident within the area assigned to the college, provided the authorities are satisfied his financial circumstances warrant it. The area of the college for this purpose would be determined by the University.

Three matters of importance in connexion with fees must be emphasised: (1) The University should adopt a fixed composition fee for the full degree courses given in constituent colleges and university departments in each faculty. (2) The inclusive fee chargeable in constituent colleges should cover the cost of admission to the various societies grouped under the Students' Union of the College. (3) The additional income of £13,500, which is estimated for a reduction of the inclusive fee for courses for a first degree in the faculties of arts, science, and engineering, would suffice only for the present number of students.

[1] Nos. I., II., III., IV., and V. were published in THE LANCET of April 26th (p. 1184), and May 3rd (p. 1251), 10th (p. 1336), 17th (p. 1410), and 24th (p. 1480), 1913, respectively.

The summary of additional income required for salaries and maintenance of libraries and laboratories, and the reduction of fees to university students amounts to £99,000.

Site and Area of the University.

With regard to sites for the central buildings and for certain other university institutions the Commissioners are convinced that the most suitable and convenient quarter for them will be found in Bloomsbury. With regard to the area of the University, they point out that under its present constitution the University has two areas. The smaller of the two is confined to the Administrative County of London, and it is only within this area that the University can under the statutes admit public educational institutions as schools, though by special provision the South-Eastern Agricultural College at Wye and the Royal Holloway College at Egham were admitted to this status on the reconstitution of the University. The larger area is defined by an imaginary line drawn at a radius of 30 miles from the central buildings of the University, and within this area the Senate has the power of recognising teachers in public educational institutions, and so qualifying them for appointment to the faculties and boards of studies, and their matriculated students for registration as internal students of the University. In Mr. Sidney Webb's opinion the difference between a school and an institution having "recognised" teachers has little reality, and he would therefore abolish the double area and extend the larger so as to include those parts of the counties of Essex, Hertfordshire, Kent, and Sussex, which at present lie beyond the 30-mile radius. The Commissioners point out that if London is to have a real university its area must be a relatively limited one, and think that the administrative county is certainly the very largest which will allow of the effective organisation they desire. "There is," they say, "a real limit to the number of students for which a university can provide the highest kind of education. It is thought by many that the University of Berlin with nearly 9000 matriculated students is already too large, and we doubt whether the University of London would ever be able to provide for a much larger number than this an education comparable to that of Berlin. When this point has been reached the need will have arisen for another university, and if the University of London can prepare the way for a new university in the south-east of England by encouraging the development on the right lines of educational institutions beyond its own immediate area, it will have performed a greater service to education and to the State than by attempting a gigantic organisation which would be likely to end in the arid formalism of the Napoleonic Université de France. There is much teaching for university degrees within the Administrative County of London and outside the walls of the proposed constituent colleges which urgently needs strengthening and development." The Commissioners think that the University might properly afford encouragement to institutions with like aims in the home counties, and that for these purposes the area of the University might well be extended in the way proposed by Mr. Webb.

University Extension.

The fourth part of the report deals with the relation of the University to the remaining provision for higher education in London and the Home Counties, and discusses the position of institutions in London, some of which are already schools of the University and are doing sound work, often under difficulty. The feeling of the Commissioners is that these schools should not be left without encouragement and recognition, and they try to suggest how best to link them up with the University without lowering the standard of the University, and to encourage their development into true university centres wherever possible.

External Degrees.

Concerning external degrees the following is the analysis of the report on the subject:—

The real cause of the controversy over external degrees has not been the question whether these degrees were or were not desirable in themselves, but the question of the government of the University, and in particular the control of the examination of external students.

There is no educational reason for entrusting the administration of external degrees to the graduates of the University. The ground on which the claim of Convocation to this control was based was the argument that the graduates possess a special interest in the reputation of the degrees, and are therefore less likely to allow any fall in their standard. But if by standard is meant the measure of the difficulty of obtaining a degree, a uniform standard for university degrees is a chimera. It has already been pointed out that the educational significance of merely passing an examination can never be very great, and what significance it does possess depends entirely on the care with which the examination is related to the actual course of study pursued. This is a matter for teachers, not for persons whose only qualification is that they have passed this kind of test themselves.

The relation of the examination to the actual studies pursued can be only roughly approximated when the candidate's facilities for study and means of education are unknown. The best kind of examination for external candidates, therefore, is one based upon the average studies of a group of students whose means of education and facilities for study are known, and which are of the kind most generally available for such candidates. Such an examination is provided in the general examinations to be conducted jointly by the teachers and external examiners for students in schools of the University.

If external candidates are to be admitted as candidates for degrees they should be admitted to these general examinations, not to separate examinations specially devised for them under the supervision of persons who have no necessary acquaintance either with teaching or examining. The claim of Convocation to control external examinations is rejected.

The real question to be considered is whether, and under what conditions, external candidates should be admitted to examinations for degrees. The demand for external tests does not correspond to the real need of candidates, which is the need for better education, for a truer understanding of its real meaning, and for adequate provision of the best teaching at a cost within their means. These needs are not satisfied by external examinations and degrees granted on their results. External degrees are not only apt to encourage the desire for a degree rather than the desire for education, but to foster the belief that the teaching of a weaker institution is university teaching, and that to read books and make prescribed experiments either with a private tutor or alone are university education. They also encourage students in training colleges to prepare simultaneously for external examinations and for their future profession. This evil does not end even with the training college. The student is often unable to do more than pass the Intermediate examination at college, and the first years of his professional life are hampered by preparation for the Final examination.

Mr. Acland is strongly opposed to teachers in schools working for external degrees, and in the broader national interests the sooner the demand for these degrees can be so reduced that the degrees themselves can be abolished without hardship the better it will be for schools and teachers. When the University is enabled to offer the highest university education at a really moderate cost, as part of a national policy, the demand for external degrees will begin to fall away. Meantime they must continue, and the University of London, as their originator, must remain responsible for their award.

In consequence of the regulations of the University for the attendance of internal students, many of them are forced to take the external degree, and others are prevented from registering as internal students at the beginning of their studies. There appears to be no reason for maintaining these regulations, except in medicine and technology, nor the statutory distinction between internal and external students, for all students other than those in constituent colleges and university departments would take the same examination.

First degrees in medicine and technology should be granted by the university only to those who have undergone a course of at least three years, given either in a constituent college, a university department, or in a school of the university. Many witnesses have urged the abolition of the external degree in medicine. Every school of medicine in the kingdom is connected with a university, and there is no hardship in the requirement that medical students should graduate in the university in which they have studied.

The reason for excluding engineering is somewhat different. The number of subjects a student in engineering has to study during his course is so great that the University is unable to require examination in them all, and includes some of the ancillary subjects as alternative options. A student may, therefore, graduate in engineering without having studied or passed any test in an important part of the course. In engineering and other technological studies no practical examination of satisfactory range can be devised and no adequate test is possible unless the student's record is included as part of the test.

Examinations in music must be purely external, and the Senate should appoint an expert committee to advise as to the regulations for the examinations and as to the examiners appointed to conduct them.

With the exception of examinations in medicine and technology, candidates should with certain limitations be admitted to all the general examinations for degrees of the University irrespective of their place or manner of education.

The general supervision of the curricula and examinations for degrees for students in schools of the University and other students except those in constituent colleges and university departments should be entrusted to a committee appointed by the Senate.

In further consideration of external degrees, the Commissioners are not enthusiastic with regard to the holding of colonial examinations, believing that the practice is detrimental to education in the colonies, but they say that close inquiry is necessary in view of the importance attached by the Council for External Students to the holding of London University examinations overseas. The matriculation examination is the only one which has been used to any extent, and it is only in the West Indies and in Ceylon that any considerable number of candidates have entered for the London examination, there being no institution in the latter of full university rank, and no university in the West Indies. The Commissioners add the significant remark that the University should in future refuse to grant an examination for matriculation even in countries with no university until the Governments concerned have stated that the holding of such an examination will not be considered detrimental to their educational policies.

(To be concluded.)

MEDICINE AND THE LAW.

An Allegation of Ill-treatment Disproved at an Inquest.

AN inquest was held recently at Hackney upon the body of Sophia Marsh, a woman 55 years of age, who had died in the Hackney Infirmary. The case was one which apparently would not have required an inquest if it had not been for the idea entertained by relatives of the deceased that she had been unkindly treated at the infirmary, and that the insanity which had caused her to be removed before her death to a ward for mental cases had been due to her having had her head shaved by the order of the medical officer who attended her. Her husband gave evidence to this effect, saying that she was "a very sensitive woman," that in his opinion the cutting of her hair "drove her mad," and was the cause of her having to be removed to the mental ward. He and his son spoke of the deceased having complained of her treatment by nurses, but the former admitted that she had been a heavy drinker for years, and had recently greatly neglected herself. The evidence of Dr. W. Brander, medical superintendent of the infirmary, was to the effect that the neglected condition of the deceased was such as to cause the order for the removal of her hair to be given, that it was effected in the ordinary way and in a perfectly humane manner by the barber. He also was of the opinion that the haircutting had nothing to do with causing the violent mental state owing to which the deceased had had to be placed among the mental patients, and deposed to her death having been due to chronic kidney disease and uræmia. The jury returned a verdict in accordance with the medical evidence. While, on the one hand, an inquest upon such a case might be termed unnecessary, and might be pointed to as an instance of the "futility" of inquests in general,[1] it may be regarded from another point of view as an instance of the usefulness of such inquiries. The holding of it meant that an investigation in open court was promptly held, which enabled accusations of a groundless character to be publicly made instead of being circulated privately and to be as publicly refuted, the refutation being sealed by the verdict of a body of ordinary citizens, the peers of the deceased. In the absence of such inquiry the accusations, however groundless, would probably have gained popular credence and might have caused endless annoyance to the medical men, nurses, and others connected with the conduct of the infirmary.

Palmer v. *Hendon Rural District Council.*

In this case, tried by Mr. Justice Darling with a special jury, the plaintiff was a school-boy who through and with his father brought an action against the council of the district in which he had developed scarlet fever while at school. He had been removed to the council's isolation hospital at Hendon, the fees being guaranteed by his father, and after remaining there for 16 days in bed had been removed to a nursing home. Rheumatism and endocarditis followed the scarlet fever, and the point at issue between the plaintiffs and the defendants was whether these were the result of the scarlet fever accruing in spite of care and skilful treatment or were due to negligence on the part of the council and of those appointed by them to take care of their patients, and generally to breach of duty by the defendants. In particular it was alleged that the after-condition of the boy was brought on by certain baths which he had been made to take. These were described as having been given "on a verandah within a few feet of the outside door of the hospital facing north-east, and at a time when there were building operations going on, and in consequence of them an open place in a wall near by." Other minor allegations were also made against the food provided and the equipment of the hospital, including one that only a single glass was provided for the boys in the ward to drink from, and that when that was broken a cup had to be used. Medical evidence for the defence was to the effect that in the verandah where the bath was given the temperature was approximately that of the ward, and that there was nothing to render it unfit for the purpose. Evidence was also given by the matron denying the alleged defects in articles used for serving food. The jury found that the council took reasonable care to provide a competent staff, but that the place where the bath was given was undesirable for the purpose of giving a bath to a fever patient, and that except in so far as this applied the council were not guilty of negligence. No damages were awarded.

[1] THE LANCET, May 24th, p. 1465.

GUY'S HOSPITAL MEDICAL SCHOOL: FORMAL OPENING OF COMPLETED BUILDINGS.

ON Tuesday next, June 3rd, the Right Hon. A. J. Balfour will formally open the completed buildings of Guy's Hospital Medical School and deliver an address in the new physiological theatre. The first block of buildings was opened by the late King Edward VII., then Prince of Wales, in 1897.

With the object of calling public attention to the completion of the work, which now makes Guy's Hospital a centre for medical and dental education which can compare with any of the larger medical centres in the provinces, invitations were issued by the medical and surgical staff of the hospital to visit the buildings on May 27th. The whole of the medical, surgical, and dental departments of the school were open to inspection, and an opportunity was given for seeing many of the methods of teaching in full working order. The buildings are divided into three main blocks. In the entrance hall of the main block is affixed the new memorial tablet to the late Sir Samuel Wilks, the memorial to Sir Astley Cooper, and busts of Wilks, Horrocks, Babington, Levy, and Addison. In the building itself are the students' laboratory for physiological chemistry, a lecture theatre capable of accommodating 400 students, research laboratories, class-rooms, the Wills' Library, and the Gordon Museum, accommodating nearly 10,000 specimens. The students' histological laboratory, the staff committee room, the department of physics, and chemical laboratories for the students and for the chemical work of the department of public health are also contained in this block. Another block is devoted to the department of pathology and contains a large lecture theatre, laboratories for the teaching of morbid histology and bacteriology, and private research laboratories for the Douglas demonstrator, the Greville student, the Gull student, and their collaborators.

The dental block, equipped with the latest appliances, is a building of two storeys, the ground floor being occupied by a waiting-room and cloak-room, a laboratory for probation work, and the various offices for the staff. On the first floor are the pupils' and the students' mechanical laboratories, that of the latter having accommodation for 100 pupils. The metallurgical laboratory is also on this floor. The conservation room runs round four sides of the central court-yard. The lighting arrangements are good, and the aspect pleasant. This department is on the second floor, has a total area of 6000 feet, and is equipped with 80 pump chairs recently purchased at a cost of over £1500.

More than £100,000 have been spent on the three blocks of buildings, but a further sum of £200,000 is necessary if the work of investigating the causes of disease and of devising new methods of treatment is to be adequately carried out. All the work of rebuilding the school has been done without any financial aid from the hospital, though the hospital benefits largely by the work of the school. It is entirely owing to the self-sacrifice of the medical and surgical staff and the munificence of several of the governors of the charity that this splendid addition to the facilities for medical and dental education has been accomplished. It now remains for the wealthy to endow this department of the hospital which has been made adequate for modern needs.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns, with populations exceeding 50,000 persons at the last Census, and whose aggregate population at the middle of this year is estimated at 17,852,766 persons, 9561 births and 4573 deaths were registered during the week ended Saturday, May 24th. The annual rate of mortality in these towns, which had steadily declined from 15·8 to 12·8 per 1000 in the five preceding weeks, rose to 13·4 per 1000 in the week under notice. During the first eight weeks of the current quarter

the mean annual death-rate in these towns averaged 14·5 per 1000, and was equal to the average death-rate recorded in London during the same period. The annual death-rates last week ranged from 4·8 in Ilford and in Eastbourne, 5·2 in Southend-on-Sea, 5·8 in Bootle, and 5·9 in Acton and in East Ham, to 18·3 in Derby and in Middlesbrough, 19·2 in Dudley, 19·5 in West Hartlepool, 20·1 in Wigan, 22·6 in West Bromwich, and 22·9 in Walsall.

The 4573 deaths from all causes were 205 in excess of the number in the previous week, and included 330 which were referred to the principal epidemic diseases, against 381 and 325 in the two preceding weeks. Of these 330 deaths, 133 resulted from measles, 70 from infantile diarrhœal diseases, 67 from whooping-cough, 28 from diphtheria, 21 from scarlet fever, and 11 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·0 against 1·1 and 0·9 per 1000 in the two preceding weeks. The deaths attributed to measles, which had been 149, 151, and 137 in the three preceding weeks, further fell to 133 last week, and caused the highest annual death-rates of 1·6 in Salford, 2·0 in Stockton-on-Tees, 2·3 in West Bromwich, 3·0 in Dudley, and 7·3 in Walsall. The deaths of infants (under 2 years of age) referred to diarrhœa and enteritis, which had been 75, 79, and 71 in the three preceding weeks, were 70 last week, and included 15 in London, 8 in Liverpool, 8 in Manchester, 3 in West Ham, 3 in Stoke-on-Trent, and 3 in Swansea. The fatal cases of whooping-cough, which had been 94, 83, and 65 in the three preceding weeks, were 67 last week; 22 deaths were recorded in London, 6 in Newcastle-on-Tyne, and 3 each in Birmingham, Liverpool, Bootle, Manchester, and Hull. The deaths attributed to diphtheria, which had been 39, 40, and 26 in the three preceding weeks, were 28 last week, of which number 7 occurred in London and 2 in Bolton. The deaths referred to scarlet fever, which had been 22, 16, and 22 in the three preceding weeks, were 21 last week, and included 4 in London, 4 in Birmingham, 2 in Portsmouth, and 2 in St. Helens. The fatal cases of enteric fever, which had been 9, 12, and 4 in the three preceding weeks, rose to 11 last week, but showed no excess in any of the large towns.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had increased from 1334 to 1411 in the five preceding weeks, had further risen to 1441 on Saturday last; 193 new cases were admitted during the week, against 216, 206, and 171 in the three preceding weeks. These hospitals also contained on Saturday last 809 cases of diphtheria, 582 of measles, 294 of whooping-cough, 39 of enteric fever, and 1 of small-pox. The 1157 deaths from all causes in London were 119 in excess of the number in the previous week, and were equal to an annual death-rate of 13 4 per 1000, coinciding with that recorded in the 96 towns. The deaths referred to diseases of the respiratory system, which had been 255, 210, and 197 in the three preceding weeks, further declined to 186 last week, but were 36 in excess of the number in the corresponding week of last year.

Of the 4573 deaths from all causes in the 96 towns, 192 resulted from various forms of violence and 366 were the subject of coroners' inquests. The causes of 39, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Hull, Leicester, and in 64 other smaller towns. The 39 uncertified causes of death last week included 6 in Birmingham, 4 in Liverpool, 3 in Manchester, and 2 each in London, Portsmouth, Bury, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1172 births and 705 deaths were registered during the week ended Saturday, May 24th. The annual rate of mortality in these towns, which had steadily declined from 17·7 to 16·4 per 1000 in the five preceding weeks, further fell to 16·3 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 17·0, against 14·5 per 1000 in the 96 large English towns. Among the several towns the annual death-rate last week ranged from 8·5 in Clydebank, 9·6 in Coatbridge, and 10·4 in Kirkcaldy, to 18·8 in Leith, 18·9 in Paisley, and 22·8 in Aberdeen.

The 705 deaths from all causes were 6 fewer than the number in the previous week, and included 93 which were referred to the principal epidemic diseases, against 106 and 89 in the two preceding weeks. Of these 93 deaths, 40 resulted from measles, 30 from whooping-cough, 11 from infantile diarrhœal diseases, 10 from diphtheria, 1 from scarlet fever, and 1 from enteric fever, but not one from small-pox. These 93 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·1, against 1·0 per 1000 in the 96 large English towns. The deaths attributed to measles, which had been 32, 30, and 33 in the three preceding weeks, further rose to 40 last week, and included 21 in Aberdeen, 14 in Glasgow, and 2 in Dundee. The deaths referred to whooping-cough, which had been 40, 45, and 32 in the three preceding weeks, were 30 last week; 14 deaths occurred in Glasgow, 5 in Edinburgh, 3 in Motherwell, 2 in Aberdeen, and 2 in Greenock. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had been 12, 18, and 12 in the three preceding weeks, were 11 last week, and comprised 7 in Glasgow, 3 in Dundee, and 1 in Ayr. The deaths attributed to diphtheria, which had been 7, 9, and 5 in the three preceding weeks, rose to 10 last week, and included 3 in Glasgow, 2 in Dundee, and 2 in Aberdeen. The fatal case of scarlet fever occurred in Glasgow and that of enteric fever in Ayr.

The deaths referred to diseases of the respiratory system, which had been 118, 114, and 117 in the three preceding weeks, fell to 81 last week; 36 deaths resulted from various forms of violence, against 23, 35, and 31 in the three preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,199,180 persons at the middle of this year, 601 births and 442 deaths were registered during the week ended Saturday, May 24th. The annual rate of mortality in these towns, which had been 18·5, 19·3, and 18·1 per 1000 in the three preceding weeks, rose to 19·2 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these Irish towns averaged 20·4 per 1000; in the 96 large English towns the corresponding rate did not exceed 14·5, while in the 16 Scotch towns it was equal to 17·0 per 1000. The annual death-rate last week was equal to 21·5 in Dublin (against 13·4 in London and 15·9 in Glasgow), 17·0 in Belfast, 27·2 in Cork, 11·4 in Londonderry, 21·7 in Limerick, and 22·8 in Waterford, while in the remaining 21 smaller towns the mean death-rate did not exceed 16·9 per 1000.

The 442 deaths from all causes in the 27 Irish towns were 26 in excess of the number in the previous week, and included 29 which were referred to the principal epidemic diseases, against numbers rising from 19 to 30 in the three preceding weeks. Of these 29 deaths, 11 resulted from infantile diarrhœal diseases, 10 from measles, 4 from whooping-cough, 2 from enteric fever, and 2 from diphtheria, but not one from scarlet fever or from small-pox. The annual death-rate from these epidemic diseases last week was equal to 1·3 per 1000; in the 96 large English towns the death-rate from these diseases last week did not exceed 1·0 per 1000, while in the 16 Scotch towns it reached 2·1. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 7, 5, and 7 in the three preceding weeks, rose to 11 last week, and included 6 in Dublin and 2 in Belfast. The deaths referred to measles, which had been 4, 10, and 10 in the three preceding weeks, were again 10 last week, and comprised 4 in Belfast, 3 in Wexford, 2 in Newry, and 1 in Dublin. The 4 fatal cases of whooping-cough, 2 of which occurred in Dublin, were equal to the average in the earlier weeks of the quarter. The 2 deaths attributed to enteric fever were registered in Dublin and Newry respectively, and those to diphtheria in Dublin and Belfast respectively.

The deaths referred to diseases of the respiratory system, which had been 97, 94, and 78 in the three preceding weeks, were 79 in the week under notice. Of the 442 deaths from all causes, 124, or 28 per cent., occurred in public institutions, and 11 resulted from different forms of

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1913.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1913.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.								Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	**4,518,191**	**1**	**999**	**562**	**—**	**38**	**1**	**35**	**355**	**12**	**4**	**2007**	**4·6**	**—**	**293**	**19**	**43**	**110**	**7**	**98**	**570**	**1·3**	**6643**	**16·1**
West Districts.																								
Paddington	142,210	—	32	48	—	—	—	1	8	—	—	89	6·5	—	6	1	1	3	—	1	12	0·9	165	12·9
Kensington	171,284	—	16	14	—	1	—	—	8	—	1	40	2·4	—	23	1	1	3	—	3	31	1·9	249	16·4
Hammersmith	123,745	—	39	11	—	1	—	—	11	1	—	63	5·3	—	—	1	1	8	—	7	17	1·4	172	15·1
Fulham	157,117	—	35	27	—	—	—	—	9	—	—	71	4·7	—	15	—	1	2	—	1	19	1·3	185	12·9
Chelsea	64,598	—	2	4	—	—	—	1	2	—	—	9	1·5	—	3	—	—	—	—	1	4	0·6	84	14·1
City of Westminster	154,810	—	15	14	—	5	—	—	7	—	—	41	2·8	—	5	1	1	2	—	5	14	0·9	215	16·3
North Districts.																								
St. Marylebone	114,532	—	33	14	—	1	—	1	3	—	—	52	4·7	—	8	—	—	2	1	2	15	1·2	190	18·4
Hampstead	86,346	—	15	14	—	3	—	—	5	—	—	37	4·5	—	2	—	1	3	1	—	7	0·8	101	13·8
St. Pancras	214,330	—	29	22	—	3	—	2	16	2	—	74	3·6	—	10	3	3	3	—	3	22	1·1	374	19·0
Islington	325,585	—	64	40	—	2	—	—	20	1	—	127	4·1	—	26	1	3	6	—	5	41	1·3	563	18·7
Stoke Newington	50,518	—	2	9	—	—	—	—	1	—	—	12	2·5	—	—	—	—	—	—	—	—	—	62	13·4
Hackney	223,353	—	41	13	—	—	—	1	14	2	—	71	3·3	—	5	—	—	3	—	5	13	0·6	296	14·4
Central Districts.																								
Holborn	46,949	—	2	7	—	—	—	—	1	—	—	10	2·2	—	3	—	—	—	—	1	4	0·9	79	18·9
Finsbury	84,679	—	7	8	—	—	—	2	12	—	—	29	3·6	—	4	—	2	4	—	2	12	1·5	155	19·8
City of London	17,916	—	2	4	—	—	—	—	2	—	—	8	4·7	—	—	—	1	—	—	—	1	0·6	23	14·7
East Districts.																								
Shoreditch	109,654	—	15	14	—	—	—	1	2	—	—	32	3·0	—	9	1	—	3	—	3	16	1·5	176	17·5
Bethnal Green	127,824	—	14	12	—	—	—	2	26	—	—	54	4·4	—	6	—	—	3	—	5	14	1·1	177	14·5
Stepney	275,300	—	49	33	—	5	—	5	35	2	—	129	4·9	—	12	1	1	2	1	8	25	0·9	405	16·0
Poplar	160,913	1	35	36	—	2	1	5	11	—	—	91	5·9	—	4	—	5	9	—	3	21	1·4	270	18·0
South Districts.																								
Southwark	188,487	—	39	23	—	—	—	2	14	—	—	78	4·3	—	29	—	1	6	—	3	39	2·2	342	19·8
Bermondsey	124,739	—	23	17	—	2	—	5	7	1	—	55	4·6	—	12	1	2	15	1	—	31	2·6	236	20·2
Lambeth	297,139	—	113	23	—	3	—	2	26	—	1	168	5·9	—	24	3	6	3	2	11	49	1·7	462	16·7
Battersea	167,464	—	66	14	—	1	—	—	15	—	—	96	6·0	—	15	1	3	4	—	6	29	1·8	265	17·7
Wandsworth	330,396	—	75	33	—	1	—	3	26	1	2	141	4·5	—	23	1	—	2	1	11	38	1·2	345	11·5
Camberwell	261,305	—	51	31	—	2	—	1	28	2	—	115	4·6	—	14	—	2	6	—	7	29	1·2	352	14·5
Deptford	109,280	—	37	15	—	5	—	—	23	—	—	78	7·4	—	13	—	1	8	—	1	23	2·2	183	18·4
Greenwich	96,015	—	20	13	—	—	—	1	11	—	—	45	4·9	—	11	1	—	5	—	1	18	2·0	136	15·1
Lewisham	168,822	—	84	34	—	1	—	—	6	—	—	125	7·7	—	9	1	6	5	—	3	24	1·5	228	14·7
Woolwich	122,382	—	44	17	—	—	—	—	6	—	—	67	5·7	—	2	1	1	—	—	—	4	0·3	153	13·9
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

violence. The causes of 11, or 2·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

VITAL STATISTICS OF LONDON DURING APRIL, 1913.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·6 per 1000 of the population, estimated at 4,518,191 persons in the middle of the year; in each of the two preceding months the rate was 4·8 per 1000. The lowest rates last month were recorded in Kensington, Chelsea, the City of Westminster, Stoke Newington, and Holborn; and the highest rates in Paddington, Poplar, Lambeth, Battersea, Deptford, and Lewisham. The prevalence of scarlet fever showed a considerable increase last month; this disease was proportionally most prevalent in St. Marylebone, Lambeth, Battersea, Deptford, Lewisham, and Woolwich. The Metropolitan Asylums Hospitals contained 1353 scarlet fever patients at the end of last month, against 1717, 1639, and 1436 at the end of the three preceding months; the weekly admissions averaged 183, against 189 and 158 in the two preceding months. Diphtheria was considerably less prevalent than it had been in the previous month; the greatest proportional prevalence of this disease last month was recorded in Paddington, Stoke Newington, the City of London, Poplar, and Lewisham. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 925, 913, and 901 at the end of the three preceding months, had further declined to 792 at the end of last month; the weekly admissions averaged 91, against 118 and 122 in the two preceding months. The prevalence of enteric fever showed a slight decline from that recorded in the two preceding months; this disease was proportionally most prevalent in the City of Westminster, Hampstead, and Deptford. There were 34 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 44 and 42 at the end of the two preceding months; the weekly admissions averaged 4, against 6 and 7 in the two preceding months. Erysipelas was proportionally most prevalent in Finsbury, Bethnal Green, Stepney, Camberwell, Deptford, and Greenwich. The 35 cases of puerperal fever notified during the month included 5 in Stepney, 5 in Poplar, 5 in Bermondsey, 3 in Wandsworth, 2 in St. Pancras, 2 in Finsbury, 2 in Bethnal Green, 2 in Southwark, and 2 in Lambeth. The 12 cases of cerebro-spinal meningitis included 2 each in St. Pancras, Hackney, Stepney, and Camberwell; and the 4 cases of poliomyelitis included 2 in Wandsworth, and 1 each in Kensington and Lambeth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the several boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex- and age-constitution of the populations of the several boroughs. During the five weeks ending May 3rd the deaths of 6643 London residents were registered, equal to an annual rate of 16·1 per 1000; in the three preceding months the rates had been 17·8, 19·0, and 18·5 per 1000 respectively. The death-rates last month ranged from 11·5 in Wandsworth, 12·9 in Paddington and in Fulham, 13·4 in Stoke Newington, 13·8 in Hampstead, and 13·9 in Woolwich, to 18·4 in St. Marylebone and in Deptford, 18·7 in Islington, 18·9 in Holborn, 19·0 in St. Pancras, 19·8 in Finsbury and in Southwark, and 20·2 in Bermondsey. The 6643 deaths from all causes included 570 which were referred to the principal infectious diseases; of these, 293 resulted from measles, 19 from scarlet fever, 43 from diphtheria, 110 from whooping-cough, 7 from enteric fever, and 98 from diarrhœa and enteritis among children under two years of age. No death from any of these diseases was recorded last month in Stoke Newington; among the other boroughs they caused the lowest death-rates in Chelsea, Hackney, the City of London, and Woolwich; and the highest rates in Kensington, Southwark, Bermondsey, Deptford, and Greenwich. The 293 deaths from measles were 12 in excess of the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Kensington, Fulham, Southwark, Bermondsey, Deptford, and Greenwich. The 19 fatal cases of scarlet fever were 10 below the corrected average number, and included 3 in St. Pancras and 3 in Lambeth. The 43 deaths from diphtheria showed a decline of 7 from the corrected average; the greatest proportional mortality from this disease was recorded in St. Pancras, Finsbury, Poplar, Bermondsey, Lambeth, Battersea, and Lewisham. The 110 fatal cases of whooping-cough were 82 below the corrected average number; this disease was proportionally most fatal in Hammersmith, Finsbury, Poplar, Bermondsey, Deptford, and Greenwich. The 7 fatal cases of enteric fever were 3 below the corrected average number, and included 2 in Lambeth. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Hampstead, the City of Westminster, Bethnal Green, Lambeth, Battersea, and Wandsworth. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases, excluding diarrhœa, was 10·7 per cent. below the average.

* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: G. Ley to the *Duncan*, on recommissioning; and R. D. Jameson to the *Achilles*, on recommissioning. Staff-Surgeons: P. D. Ramsay to the *Ringdove*, on recommissioning; and J. P. H. Greenhalgh to Portland Hospital, temporarily. Surgeons: C. H. Symons to the *Duncan*, on recommissioning; R. F. P. Cory to the *Hecla;* F. G. H. R. Black to the *President*, additional, for survey on stores at Yarmouth Hospital and to Yarmouth Hospital; and J. D. Danson to the *Achilles*, on recommissioning.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Thomas E. Noding is placed on retired pay (dated May 25th, 1913).

Major Charles Dalton to be Lieutenant-Colonel, vice J. J. C. Donnet, retired (dated May 7th, 1913).

Captain Ernest G. Ffrench to be Major (dated May 28th, 1913).

The undermentioned Lieutenants (on probation) are confirmed in their rank: Alexander G. Biggam and James L. Huggan.

Lieutenant-Colonel G. H. Barefoot has arrived home from Ranikhet Cantonment for duty. Lieutenant-Colonel A. A. Sutton, D.S.O., has been appointed Commandant of the Royal Army Medical Corps School of Instruction, in succession to Lieutenant-Colonel G. D. Hunter, D.S.O. Lieutenant-Colonel S. J. Rennie has been appointed an Honorary A.D.C. to the Commander-in-Chief in India. Lieutenant-Colonel R. Holyoake has been appointed Senior Medical Officer, Sheerness. Lieutenant-Colonel J. Donnet has embarked home from the Straits Settlements. Lieutenant-Colonel W. Turner has taken up duty at Aldershot in charge of the Connaught Military Hospital and as Officer commanding No. 2 Company of the Royal Army Medical Corps. Lieutenant-Colonel N. Manders has been permitted to exchange places on the foreign service roster with Lieutenant-Colonel M. T. Yarr, Medical Inspector of Recruits to the London Service; the latter officer will now proceed abroad during the coming trooping season instead of the former.

Major N. E. Dunkerton has been selected for appointment as Adjutant of the Second (London) Division, Royal Army Medical Corps School of Instruction in succession to Major T. E. Fielding. Major R. J. Blackham has been appointed to command the Military Hospital at Jutogh Cantonment. Major J. Poe has arrived home for duty from Bloemfontein. Major A. L. A. Webb has taken up duty at the Military Hospital, Edinburgh. Major E. MacDonnell has arrived home for duty from Bermuda. Major M. M. Lowsley has taken up duty as Staff Surgeon and Civil Medical Officer at Ambala Cantonment. Major E. F. Q. L'Estrange has joined at Cannanore. Major A. H. Morris has arrived home on leave

of absence from Malta. Major A. R. C. Parsons has been appointed Specialist in Operative Surgery at Edinburgh. Major C. D. Myles has joined at Chester. Major G. J. Buchanan has arrived home for duty from India, tour expired. Major G. A. Moore has been appointed in charge of the Military Families Hospital at Chatham.

Captain J. W. S. Seccombe has been transferred from the Military Hospital at Devonport to Topsham. Captain T. T. H. Robinson has been appointed to the Northern Command. Captain W. Egan has been transferred from Dublin to the Curragh Camp. Captain F. D. G. Howell has taken up duty at the Military Hospital, Preston, on return home from Lahore. Captain D. Coutts has been transferred from Ranikhet Cantonment to the Military Hospital at Bareilly. Captain G. H. Stevenson has been appointed to Strensall for duty. Captain H. Spencer has been transferred from Ambala Cantonment to do duty with the Presidency Brigade at Calcutta. Captain F. H. M. Chapman has taken up duty in the Seventh (Meerut) Division on transfer from the Presidency Brigade at Ambala. Captain F. J. Stuart has been appointed to the Military Hospital at Muttra. Captain W. H. Forsyth has been appointed to the Southern Command for duty on return home from Pretoria. Captain A. S. Williams has taken up duty in the Dublin District. Captain A. H. T. Davis has been appointed to the Military Hospital at Malappuram Cantonment, Madras Presidency. Captain C. McQueen has arrived home for duty from South Africa, tour expired. Captain C. G. Thomson has been appointed Specialist in Dermatology to the Scottish Command. Captain R. Storrs, serving at Portsmouth, has been permitted to exchange places on the roster for service abroad with Captain F. C. Lambert, serving at Pembroke Dock. Captain D. P. Watson has taken up duty as Clinical Pathologist to the Queen Alexandra Military Hospital. Captain T. E. Harty has been appointed Specialist in Dermatology and Venereal Diseases at the Military Hospital, Edinburgh. Captain A. W. A. Irwin has been appointed to the Irish Command.

Lieutenant C. D. K. Seaver has left the Curragh Camp for a tour of service in India. Lieutenant C. M. Ingoldby has been transferred from Kilkenny to Buttevant. Lieutenant T. A. Weston, on arrival in India, has been appointed to the Military Hospital at Lucknow Cantonment for a course of Instruction in Indian Military Sanitation. Lieutenant J. H. M. Frobisher has taken up duty at the Military Hospital, Leeds, on transfer from the Military Hospital at York. Lieutenant W. Stewart has been appointed to hold charge of the Military Hospital at Weedon and Medical Officer to "C" Squadron, 12th Royal Lancers. Lieutenant E. C. Deane has been transferred from the Military Hospital at Preston to Carlisle. The following Lieutenants have been notified for service abroad during the coming trooping season: E. B. Allnutt, S. P. Sykes, H. C. Todd, H. J. G Wells, E. C. Deane, F S. Tamplin, I. R. Hudleston, W. Stewart, A. G. Biggam, and R. K. Mallam. Lieutenant D. Reynolds has embarked for India. Lieutenant D. T. M. Large has been transferred from Glencorse to the Military Hospital at Glasgow. Lieutenant B. Biggar has embarked for a tour of service at Cairo. Lieutenant J. S. Levack has taken up duty at the Military Hospital, Nowshera. Lieutenant J. M. Elliott has been appointed to the Military Hospital at Cosham.

INDIAN MEDICAL SERVICE.

Surgeon-General A. M. Crofts, C.I.E., has been transferred from the Second (Rawal Pindi) Division of the Northern Army in India to Simla for duty as officiating Director-General.

Colonel G. F. A. Harris, C.S.I., honorary surgeon to the Viceroy and Governor-General of the East Indies, has been granted seven and a half months' combined leave of absence home from India. Lieutenant-Colonel V. G. Drake-Brockman has been appointed as Residency Surgeon at Mewar. Lieutenant-Colonel H. F. Cleveland has taken up duty as Assistant Director of Medical Services to the Aden Brigade. Lieutenant-Colonel H. E. Banatwala has been appointed to officiate *pro tem.* as Inspector-General of Civil Hospitals in the Central Province.

Major C. H. Fleming has been appointed Civil Surgeon at Jubbulpore. Major J. M. Woolley has been granted combined leave of absence home from India for eight months. Major R. McCarrison has been placed on special duty in connexion with the Prevention of Endemic Goitre and Cretinism in India. Major R. F. Baird has been appointed Civil Surgeon at Gonda. Major J. W. Lethbridge has been granted 15 months' leave of absence home from India.

Captain M. R. C. MacWaters has taken up duty under the civil administration of the United Provinces of Agra and Oudh. Captain H. H. Robson has been appointed a Specialist in Mental Science. Captain J. H. Murray has taken up duty as Senior Medical Officer at Port Blair. Captain M. A. Nicholson has been appointed Medical Officer to the Laurence Military Asylum at Sanwar. Captain H. M. Brown has been appointed to the Sanitary Department in Bihar. Captain C. H. Reinhold has been transferred to the Civil Medical Department in the United Provinces of Agra and Oudh. Captain R. S. Kennedy has been appointed for duty on the North-East Frontier as Medical Officer in charge of the Military Police. Captain W. A. Mearns has taken up duty as substantive Medical Officer to the 69th Punjabis.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Cadets to be Lieutenants (on probation): Thomas McClurkin, from the Belfast University Contingent, Officers Training Corps (dated April 30th, 1913). Douglas Reid King, from the Glasgow University Contingent, Officers Training Corps and Gavin Young, from the Glasgow University Contingent, Officers Training Corps (dated May 1st, 1913). Thomas Ingram Dun, from the Glasgow University Contingent, Officers Training Corps; Hugh Kingsley Ward, from the Oxford University Contingent, Officers Training Corps (dated May 2nd, 1913); and William Warwick Wagstaffe, from the Inns of Court Officers Training Corps (dated April 24th, 1913).

DEATHS IN THE SERVICES.

Deputy Inspector-General William Rogerson White, C.B., R.N., on May 25th, at Warblington, in his 63rd year. He entered the Navy as a surgeon in 1871. As fleet-surgeon of the *Raleigh*, Flagship of Admiral F. G. D. Bedford, he landed at Bathurst, on the River Gambia, West Coast of Africa, with the naval brigade, in coöperation with the 1st West India Regiment, in the punishment of a rebellious slave-raiding chief (mentioned in despatches, slightly wounded, and made a C.B.). Later he served with Lord Sackville in exploring the hitherto unknown watersheds of the Pilcomayo, on the borders of Bolivia and Paraguay. He retired with the rank of Deputy Inspector-General of Hospitals and Fleets in 1905.

ASSAULT ON A SURGEON OF THE INDIAN MEDICAL SERVICE.

Captain A. J. Vernon Betts, I.M.S., resident surgeon of the European General Hospital, Bombay, was attacked by a Mahomedan butler with a carving knife on May 19th. The assailant attempted suicide, and both he and his victim were seriously injured.

Correspondence.

"Audi alteram partem."

THE TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In a preliminary note with regard to the treatment of pulmonary tuberculosis with tuberculin at King Edward VII. Sanatorium published in THE LANCET of March 15th I gave some figures relative to the disappearance of tubercle bacilli in the sputum of tuberculin-treated cases—namely, the "Sputum records of 110 consecutive patients thus treated." The words quoted are not sufficiently explicit; they might be taken to mean that the records refer to 110 consecutive admissions, or, in other words, to 110 unselected cases. This was not the case. The patients under consideration were the first 110 patients to whom tuberculin was given. This number, as a matter of fact, represented some 64 per cent. of the total number of patients treated in the Sanatorium during the period covered by the figures. Of the remaining 36 per cent., the larger proportion were, in my opinion, unsuited for tuberculin, and the smaller proportion, though suitable on clinical grounds, intended to stay in the Sanatorium for too short a period to make it worth while to begin a course of tuberculin. It should be added that a small number of the tuberculin-treated were not selected as being suitable, but

as seemingly hopeless cases to whom tuberculin might possibly confer some benefit.

The point I wish to make clear is that the 110 tuberculin-treated patients were, to an appreciable extent, selected cases. This element of selection is one which has to be taken into consideration.

I am, Sir, yours faithfully,

NOEL BARDSWELL,
Medical Superintendent, King Edward VII. Sanatorium, Midhurst.

May 23rd, 1913.

PS.—Since this letter was written THE LANCET of May 24th has been published, and contains a letter from Dr. C. Reissmann. Dr. Reissmann's results are, as he points out, strikingly similar to those which I have recorded. It is not, however, stated explicitly by Dr. Reissmann whether or not his consecutive cases treated with tuberculin represented consecutive admissions to the sanatorium. If all his patients received tuberculin, thus eliminating any element of selection—this the figures themselves suggest to be the case—Dr. Reissmann's results are better than any we have as yet been able to obtain.

INSANITY AND DIVORCE.

To the Editor of THE LANCET.

SIR,—It is stated by the Secretary of the Divorce Law Reform Union, in his letter in THE LANCET of May 17th, that "insanity is brought forward as a ground for divorce, not as a punishment, but in the interests of the sane spouse and children and countless generations to come." I do not think that it requires any reference to the "high authority" he quotes to see that as it at present stands the clause in the Bill is absurd. Men who suffer from recurrent attacks of mania and melancholia, women who in addition run all the risks of the puerperal insanities, and who usually recover in from three to nine months, are surely more likely to inflict "illimitable sufferings on future generations," rather than the incurable lunatic who has been five years confined in an asylum.

From a eugenic point of view, if insanity is to be pilloried as a ground for divorce, why not tuberculosis?

I am, Sir, yours faithfully,

J. BATTY TUKE, jun., M.D.

New Saughton Hall, Polton, May 23rd, 1913.

CHLORETONE OVERDOSAGE.

To the Editor of THE LANCET.

SIR,—I have read with interest the account in THE LANCET of May 17th of chloretone overdosage by Dr. W. Essex Wynter. Chloretone has been largely used for the treatment of chorea at the Manchester Royal Infirmary during the last few years, and as resident medical officer I had the opportunity of seeing three cases of definite poisoning by the drug. The first was the case of a female who had taken over 30 grains for toothache. There was extreme incoherence of thought and of speech, contracted pupils, and diminished knee-jerks. This condition changed to one of dulness amounting to semi-coma; the patient was roused with difficulty and did not respond in any way to questioning, and to external stimulation only when this was forcible. The stomach was washed out, a large enema was given, and this was followed by a minim of croton oil. The woman remained drowsy for some 24 hours, but ultimately was cured.

The other two cases were under treatment for chorea, and were taking routine doses of three grains of chloretone three times a day. The twitchings improved, but in both cases a state of what is best described as imbecility supervened. They both showed contracted pupils, diminished knee-jerks, and mental dulness; in the first a condition of stupor followed and was maintained for several days after the drug was stopped. The mental state in all three cases prevented any investigation into the sensory system being made.

Dr. Wynter's explanation of the production of these toxic symptoms in those cases that are taking the drug regularly is almost certainly the correct one; the accumulation of an insoluble drug within the alimentary canal followed by the sudden absorption of large quantities when any substance capable of dissolving it is taken by mouth. Chloretone is undoubtedly a useful drug in the treatment of many conditions, and like most useful drugs its action requires careful and constant supervision.

I am, Sir, yours faithfully,

Manchester, May 24th, 1913. DONALD E. CORE.

THE SIGHT TESTS OF THE BOARD OF TRADE.

To the Editor of THE LANCET.

SIR,—Since the Board of Trade has adopted an imperfect copy of my lantern it must have recognised how very inefficient the wool test for colour blindness is. It is to be hoped that in the reports those who fail by one or other of the tests will be clearly indicated. The point that I specially wish to raise is the urgent necessity of the determination of a standard, both for visual acuity and colour vision, which is necessary for an officer in the Mercantile Marine. The Board of Trade is rejecting men now whom I should not reject. It is very hard for a man who has been 15 years at sea and who has passed the Board of Trade tests many times to be suddenly rejected for colour blindness when there has been previously no suspicion of any defect.

As there is a gradual transition between total colour blindness and normal colour sense, it is absolutely necessary that a correct standard should be fixed. The first point to know is the distance at which the ordinary ships' lights should be recognised. Experiments could then be made with ships' lights and neutral glasses at the required distance. I am strongly of opinion that no officer who has been many years at sea and who has passed the Board of Trade tests many times should be rejected without a thorough practical test on the river or at sea.

I am, Sir, yours faithfully,

London May 21st, 1913. F. W. EDRIDGE-GREEN.

THE TREATMENT OF SYPHILIS BY SALVARSAN.

To the Editor of THE LANCET.

SIR,—In a communication by Mr. Bayly in THE LANCET of May 24th I observe that he states that I am one of those who still believes that the routine treatment of syphilis by intravenous injections of salvarsan involves an unjustifiable risk to life. In a correspondence with Mr. Bayly on this subject two years ago I pointed out that I was in the habit of employing salvarsan as a routine treatment, and since that time I have brought forward communications at meetings of the British Medical Association and of the Royal Society of Medicine from which it was obvious that I was in favour of its employment. For reasons best known to himself Mr. Bayly still continues to quote me as an antagonist to the salvarsan treatment, though as pathologist to the Lock Hospital, of which institution I am senior surgeon, he could easily, if he wished, obtain evidence to the contrary. May I therefore solicit the courtesy of your columns to enable me again to contradict his erroneous statements, whilst assuring you that I shall never in the future occupy one line of your valuable space in any controversial discussion with Mr. Hugh Wansey Bayly.—I am, Sir, yours faithfully,

J. ERNEST LANE.

Queen Anne-street, W., May 28th, 1913.

THE INNERVATION OF THE ORBICULARIS ORIS MUSCLE.

To the Editor of THE LANCET.

SIR,—Mr. Edmund C. Bevers states, at the end of his paper on a Case of Facio-Hypoglossal Anastomosis in THE LANCET of May 24th, 1913, p. 1451, that the orbicularis oris and the transverse fibres of the tongue always contract together, and that it is believed that the facial nerve derives its lip fibres from the hypoglossal nucleus. But the late Dr. Alexander Bruce showed in 1898[1] that with a little care and practice it is easy to volitionally contract the orbicularis independently of the transverse muscles of the tongue, and

[1] Scottish Medical and Surgical Journal, vol. iii., bottom of p. 387.

also the latter independently of the former. In 1908 Dr. Bruce published, in colloboration with Dr. J. H. Harvey Pirie, a beautifully studied and reasoned out case in the *Review of Neurology and Psychiatry*, vol. vi., p. 685, of a man of 65 who died four and a half months after the onset of a complete unilateral facial palsy. Histological study showed (1) degeneration of all the cells of the homolateral facial nucleus, (2) of none in the heterolateral, (3) not a single degenerated or abnormal cell in either hypoglossal nucleus, nor in either oculomotor nucleus. Drs. Bruce and Pirie naturally concluded that the motor fibres of the orbicularis oris muscle do not rise in the hypoglossal nucleus, and do rise in the homolateral facial nucleus. I may add that I have elsewhere shown clearly how this very easy question of the nuclear origin of the motor fibres and the ganglionic origin of the muscle afferent fibres of the orbicularis oris muscle complex can be settled by the sure test of experiment. It is greatly to be hoped that some experimental anatomist will take my hint.

I am, Sir, yours faithfully,

LEONARD J. KIDD, M.D. Brux.

London, N.W., May 24th, 1913.

THE DIFFICULTIES OF THE LONDON INSURANCE COMMITTEE.

To the Editor of THE LANCET.

SIR,—The crusade initiated by Mr. Rockliff, of the London Insurance Committee, for the proper limitation of the number of insured persons whom a "panel doctor" may accept is being carried on with pertinacity. Not long ago, it will be remembered, the chairman of the Committee (Mr. Dawes, M.P.) succeeded in stifling discussion on this topic by a somewhat partisan use of his position; but he did not succeed in concealing the gross abuses which the London Committee seem to have permitted, if not actually to have encouraged. Mr. Rockliff has at length succeeded in moving that it is undesirable for any London panel practitioner to have more than 2000 names on his list; and the general sentiment of the profession will certainly agree with him that it is impossible to afford satisfactory service for any larger number, however much it may suit the exigencies of party politics to allow 6000 or 7000 names on a list. Further than this, a distinctly Gilbertian plan to discourage those who have taken on more patients than they can efficiently serve has been recommended by the Medical Benefit Subcommittee. There are, it happens, some 400,000 insured in the administrative area of London who have not yet chosen or been allocated to any doctor. For the first quarter of the (Insurance) year the committee possesses funds amounting to over £34,000 for the purpose of paying capitation grants in respect of these people. This sum rightly belongs to the panel doctors, for they have had to accept and treat the great majority of the sick insured whose hitherto healthy residue is partly represented by the aforesaid 400,000. How, then, should the £34,000 be apportioned? Obviously, if it is divided in exact proportion to the numbers already on each man's list, those who have already put themselves in the way of scamping their work by accepting several thousands of names will score off their more conscientious professional brethren. Yet if it is distributed in the inverse proportion, those who have done least work will get the most pay. The suggestion put forward by the subcommittee is that those with over 2000 names on their lists shall get nothing; whereas those with less than 2000 shall divide the £34,000 in proportion to the number of names they have accepted. This ingenious scheme certainly attempts to make the punishment fit the crime; but we fear it works considerable hardship and injustice as between the man with 2001 panel patients and him with 1999. At least, it is satisfactory to know that the scandals recently revealed have attracted so much attention that they are not likely to be tolerated in future.

I am, Sir, yours faithfully,

May 26th, 1913. W. S. G.

AN International Congress for Neurology, Psychiatry, and Psychology will be held at Berne from Sept. 7th to 12th, 1914, under the presidency of Professor Dubois. This will be organised by the Neurological Society of Switzerland, and it will be the continuation of the Congress of Amsterdam of 1907.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 1490.*)

XI.—THE LOCAL GOVERNMENT BOARD AND THE INSURANCE COMMISSIONERS OF SCOTLAND.

Effect of Earlier Diagnosis on Public Health.

ON reaching Edinburgh my first care was to call at the Local Government Board for Scotland, where I was cordially received by Dr. W. Leslie Mackenzie and Dr. Thomas F. Dewar. Everything the department could do for me was done; everything I asked for was placed at my disposal. My principal purpose at the bureau was to ascertain whether, in the opinion of the medical department of the Local Government Board, the Insurance Act would tend to the better preservation of public health. In answer to my questions it was urged that under the Act the authorities would obtain earlier knowledge of the prevalence of disease, and preventive measures could be sooner applied, and thus be rendered more effective. One of the great difficulties, especially when phthisis is suspected, is to induce the individual to make an early application for advice. The patient fears to lose his employment, and thinks it will be time enough to hear the worst when his vague symptoms become more pronounced. Such a patient will learn that to-day, even if he does lose his employment, he can fall back on his sick allowance and not be entirely ruined. But this position is not likely to have very much effect in regard to early tuberculosis; for, as a rule, it is the patient himself who delays, who does not want to know what he fears to hear.

With regard to epidemics, insanitary areas, and the Act, under Section 63 of the Act a new force should be generated for improving sanitary conditions, but the Act may not be of much use in case of a severe epidemic. The hope is, however, entertained that the extra pressure which the Insurance Act should bring to bear will break down legal quibbling and resistance to general sanitary measures, and so end in the promotion of public health.

Possible Deterioration of Medical Practice.

The public health authorities at the Scottish Local Government Board showed themselves greatly interested in the character of the medical attendance that would be given. Would the treatment be improved or would it degenerate? A case has been mentioned to me of a physician who used to do "a chest examination so carefully that an angel could not find fault." As a panel doctor he had been regretfully compelled to abandon such painstaking methods. Undoubtedly the pressure of work is greater under the Act in certain circumstances, but it will be necessary to wait some six months to see if this pressure lasts before drawing big reflections from it. I have seen notes taken of a practice during the period when insured persons were being enrolled, but were not yet entitled to medical benefits. At that time, 10 to 20 per cent. per day of the patients seen were insured persons. After Jan. 15th, when the insured became entitled to medical attendance, their percentage was at once doubled. There would have been good omen in this desire to see the doctor if it had meant that patients came at an earlier stage of chest disease, but it really signified that there was a greater number of trifling cases of vague uneasiness or "muscular rheumatism." The insured public is still in the stage of wanting to see the doctor so as to get some tangible return for their contributions under the Act.

"A Wage Limit for Doctors."

The concern whether the Act will tend to lower the character of medical practice is thus seen to be very natural and well founded. It is quite obvious that practitioners engaged in working-class practice will have very much more work to do, and in some cases may get a larger pecuniary return, "If," was the significant comment made to me when discussing the situation, "this is allowed." For the feeling is growing that there must be "a wage limit" for doctors, as well as for patients, by which phrase is meant the limitation of the number of insurance patients whom one practitioner may accept. Some simplification in medical practice may legitimately be allowed; it is quite obvious that a

panel doctor may be forced to recognise that he can no longer afford the time to talk politics with his patients, and interviews will be strict and businesslike. But will practice be conducted on more or on less scientific lines? The general view is that a decline from the present standard will follow, but I am not so sure. Till recently the newly qualified practitioner went out into the world with the idea that he could apply his hospital methods to his private patients. Now, in a hospital time is occupied solely in diagnosis and treatment—no time is wasted in getting to work, and all fetching and carrying is done for the doctor. The newly qualified man soon discovers that he has to give up a great part of his time to making up medicines, to going from house to house, and, above all, to listening and replying sympathetically to his patients. And here is where the change of to-day has occurred. The panel doctor will not in many cases spend time in dispensing; he will get his messages early, if he is a man of order, so that he can best organise his rounds, and he will be allowed to abbreviate the sympathetic talk without involving the public health in any great danger. These things should not make for a lowering of standards. Then the regularity of income is worth 20 per cent. more money, and the panel practitioner is spared the "battle of the heart" when he has to decide what to charge his patients. A town has been mentioned to me—I will not particularise further—where among the ten local practitioners one practitioner was gifted not only with a very tender heart but with a large private fortune. He charged many of his patients little or nothing out of sheer kindness, and he had many patients, but it was an unfair form of competition against others who could not afford to be so generous. To a large measure this sort of thing will be swept away by the Act.

I gathered from the Scottish Insurance Commissioners that it was not thought that the returns which have to be made out by the panel practitioners will be of much value as statistics. Some of these returns which have been received have no semblance of regularity, the mark of haste being over them all. We can, perhaps, afford to lose whatever value these records might have had. What we cannot afford to lose is the deliberate, thoughtful, unhurried attention which the medical attendant must give to his patient. This, in the opinion of many men, can only be secured by imposing a wage limit on doctors. No medical man should be allowed to have more insured patients on his list than he can reasonably be expected to attend. It may be said that the matter will right itself. The patient who receives two and a half minutes' attention from his doctor will soon go to his friend's doctor who gives ten minutes. Such adjustments, however, require much time, are only partial, and are not likely to very materially affect the situation. Therefore, complaints are constantly made and sometimes appear in the papers. Thus the *Scotsman* mentioned recently a panel doctor who is making 70 visits a day, and from 6 to 8 P.M. receives at his surgery about 50 more patients. Such facts explain why on leaving the offices of the Local Government Board for Scotland the chief impression I carried away was that of having heard a new and forcible cry: "A wage limit for doctors." On the face of it, some regulations for the limit of the number of insurance patients which one medical man might accept would meet one of the dangers created by the Insurance Act—viz., that work may be scamped by those who undertake to do too much. A wage limit imposed to prevent people with ample means obtaining medical attendance at cheap contract rates has always been considered a reasonable demand in defence of the public no less than of the practitioner. A limit imposed to prevent medical men, while receiving ample return, from giving insufficient time and care to their patients has a similar claim to public support, though when we come to the practical point of defining the limit we see the difficulties of the matter. If a panel doctor has 2000 insurance persons on his list he receives £700 a year. This should be ample for him, some may say, at least so far as contract practice is concerned, and if in the public interest it may be urged that measures should be taken to prevent medical men attempting more than they can satisfactorily accomplish, 2000 patients might be taken as a test number.

I am myself persuaded to the view that a limitation of panel patients would be a step in the best interests of all concerned, but I do not wish to conceal the strength of the arguments against such a limitation. First, for practitioners likely to be dependent entirely upon panel patients, of whom there are many, a maximum income of £700 a year—supposing that they obtain this clear—is not high enough. The cost of entering the medical profession is too great and the curriculum is too arduous to make such an income any temptation to recruits. Secondly, an orderly prompt man, rapid alike perhaps in diagnosis and in practical measures, can easily give adequate attention to 50 per cent. more patients than can a more desultory man with a mind slower to work, though doubtless equally correct in its working. Why should the swift be restrained in behalf of the tardy? Why should not the business-like doctor receive the reward of his qualities?

The Mileage Problem.

From the Local Government Board I proceeded to the Insurance Commissioners for Scotland. Here the chairman, Mr. James Leishman, received me very courteously, and was so good as to devote considerable time to discussing the various points raised. At that moment Mr. Leishman was greatly preoccupied by the question of mileage. He doubted if anyone outside the administration had any conception of the difficulties of the problem, while incidentally I saw here another argument against the theory that a fair and adequate service would be at once secured by a limitation of the number of patients, inasmuch as some practices can obviously be worked at vastly less expense than others. Several times Mr. Leishman repeated his conviction that the doctors were going to make a lot of money out of the Act. Over and above what the Act would bring, they were to have, he pointed out, £10,000 a year for mileage in the Highlands and the Islands, that is to say Orkney and Shetland, and £16,000 in the Lowlands. The medical men practising in those districts were going to receive from the Government £26,000 a year, which was about equal, at 2½ per cent., to a lump sum of £1,000,000. This was, he thought, no inconsiderable endowment of the profession. And this was no mere project—the money was there; it was now only a matter of distributing it. But it was at this point that the greatest difficulty arose. How was it to be distributed—on what principle? It would be quite impossible to check the doctor's bills for mileage; to tell whether they were entirely for visiting insured persons or whether paying patients had not been seen at the same time. It was impossible for an administration to go into the private accounts and business of each individual practitioner. The payment must be based on the same principle as the insurance. The profits arose from the general prevalence of good health. So it was proposed to pay 1*s.* a year and per mile beyond three miles for insured persons who lived more than three miles away from the nearest panel doctor. If the patient lived in some inaccessible spot which could not be reached in a motor or carriage, then twice the amount would be given, and the same if it was necessary to hire a boat. These payments would be annual, whether or not the insured persons required medical attendance.

The Mileage Maps.

At first considerable hostility was shown towards the Insurance Commissioners by the medical profession. This was notably the case when the Commissioners appointed two medical men as assistants. But they were not brought to Edinburgh as rival practitioners. They have not attended a single patient. On the contrary, I am informed, they have been working in the interests of the profession and helped to prove that there was a good case in favour of an extra grant, so that allowances might be made for mileage. The amount of calculation needed to ascertain what such an allowance ought to cost has been elaborate. I was shown a great number of county maps. These were more or less covered with small painted circles. Each circle had been drawn round the residences of panel doctors and represented the three-mile radius. Now it remained to ascertain how many insured persons lived outside these circles and at what distance from the nearest circle. The measurements that have to be taken, the calculations that must be made, and the tabulating of the results has necessitated assiduous labour. To plan and organise all this the aid of men with ideas, with method, and with ingenuity was needed and has been obtained. Even now, though a gigantic task has been accomplished, the resulting figures only claim to be approximately correct. In round numbers there will be 1,500,000 insured persons in Scotland, not quite a third

of the population. By the end of March, 1913, one-fifth had not yet chosen their panel doctor. Till the selection or allocation of medical attendant is complete it is not possible to know precisely what amount of mileage will have to be paid for. Then in some parts of the country only about 15 per cent. of the population is insured. This is notably the case in the Highlands because so many of the crofters are not employed persons and so large a section of the population has emigrated. The mileage difficulty with this sparse population is so great that the grant of £10,000 a year was necessary; but all this had to be proved, to be rendered very clear and evident, before such special help could be obtained.

Friendly Societies Saved by the Act.

Mr. Leishman was especially anxious I should understand that the Act was an actuarial scheme. He complained that some medical men did not recognise the grave responsibility that rested upon them in regard to the certificates they signed. The certificate was the only safeguard against the improper payment of sickness benefits. The actuarial basis of the Act rested on the five years' investigation made for the Oddfellows by the present Government actuary. Under his guidance the Government assumed that the average sickness amounted to a fraction above seven days per head in the course of the year. Did the medical profession understand that to augment this annual average by one day would wreck the Act? It would then be impossible to pay the sick benefits promised. The benefits would have to be decreased or the contributions increased. In this respect also the panel doctors must give weekly and not fortnightly certificates for all the lighter cases. Some of the newer Approved Societies did not appreciate this point but the older societies did, for they have suffered. The Scottish Approved Societies were better managed, he considered, than similar voluntary associations in England. Their members were better educated and much shrewder business men. Mr. Leishman suggested that the Insurance Act had saved many of the Friendly Societies of the country from bankruptcy, a view that receives support from an inspection of the report of the Chief Registrar of Friendly Societies, Dec. 31st, 1910 (159-I.).

Contracting Out.

In regard to contracting out and to the establishment of a wage limit for panel patients, it may be mentioned here that at Peebles there are designers for the mills who, like some of the metal workers at Motherwell, earn more than £160 a year, and objections have naturally been raised to including in the contract system workers whose incomes exceed the income-tax limit. In Buteshire and Perth there were attempts to fix an income limit which were strongly opposed by the Friendly Societies. In regard to contracting out, almost all the Insurance Committees of Scotland have decided to refuse their sanction. This determination is due to the difficulty that has been experienced in forming panels. It was thought that some doctors wanted to contract out of the Act with selected lives, and the panel doctors objected that this was not fair competition. One medical practitioner had several hundred applications for a place on his list, but he only accepted about a hundred. It was argued that the most troublesome patients were being left for the panel doctors, and the Insurance Committees, on receiving complaints of this description, felt they ought to support the panel doctors rather than the doctors who had fought against them and the Act. If there had been no such hostility contracting out would be more readily sanctioned. But now that a struggle has taken place the Insurance Committees feel that it is a matter of loyalty to stand by that section of the medical profession which was readiest to work the Act. Thus, for instance, at Motherwell, where I described the attempt to form a workers' medical association, all the local practitioners are on the panel. The Scottish Insurance Commissioners when they went down to hold an inquiry endeavoured, as Mr. Leishman explained, to act as fairly as possible. They represented a central authority that has no axe to grind. The proposed association was obviously a wholesale attempt to contract out of the Act, and therefore it could not be sanctioned. This result has been far-reaching, for now in Scotland, excepting the Post Office servants, no one has been allowed to establish a special system providing medical attendance.

(To be continued.)

THE GERMAN CONGRESS OF INTERNAL MEDICINE.

(FROM OUR BERLIN CORRESPONDENT.)

THE thirtieth German Congress of Internal Medicine was held at Wiesbaden from April 15th to 18th, when many interesting subjects came under discussion.

Theory of Fever.

Professor MEYER (Vienna) said that the temperature of the animal body was determined by a relation between the chemical production and the physical loss of heat; when the temperature remained constant the positive chemical and the negative physical processes must be in a state of equilibrium. The mechanism of regulation which had its seat in the central nervous system might be regarded as consisting of two antagonistic centres connected together—namely, the calorific centre and the cooling centre. The regulating apparatus might be influenced by reflex action of heat or cold on the skin or immediately either physically by the temperature of the blood or by different chemical agents. Of the latter, apart from albuminoids and toxins, there might be mentioned as exciters of the calorific centre cocaine, adrenalin, and tetrahydronaphthylamin, and as exciters of the cooling centre picrotoxin, aconitin, veratrin, and digitalin. It must therefore be concluded that in pyrexia a paralysis of the cooling centre and a hyperexcitement of the calorific centre have been present. The heat centre was resistant in fever against a cold bath, so that a decrease of temperature endured for hours, whilst under normal conditions the calorific centre responded to such an irritant by an immediate regulation of temperature. The only medicinal substances useful for the treatment of pyrexia were those which limited the production of heat, such as quinine, antipyrin, acetanilid, and salicylates, but not those which increased the loss of heat.

Professor VON KREHL (Heidelberg) said that the centre for the regulation of temperature was situated in the brain between the anterior end of the thalamus opticus and the corpora quadrigemina. If in experiments the fore-brain and the corpus striatum were separated from the more caudally situated part the regulation of temperature was preserved. All these centres were bilateral. One side was sufficient for the preservation of the function, and from many parts of the brain these centres were susceptible, especially from the corpus striatum. During pyrexia any irritation and irritability were increased, and by way of the sympathetic nerve were transferred to the glands producing internal secretions, and from them chemically to the structures which produced heat—i.e., the muscles, the liver, &c. The quality of the metabolism of a patient in a condition of pyrexia was the same as that of healthy persons. The pyrexial patient was in a state of underfeeding, the albuminous substances forming about 20 per cent. of the general metabolism. The equilibrium of albumin might be obtained by moderate doses of albuminous substances or large doses of carbohydrates and an administration of nourishment equivalent to 40 or 50 calories for each kilogramme of the patient's weight. He disapproved of the forced administration of cold baths, but believed that in enteric fever small doses of pyramidon might be tried.

Dr. CITRON and Dr. LESCHKE (Berlin) reported that they had made experiments on animals for the purpose of ascertaining whether the pyrexia of an infectious fever arose from direct action of the infection on the organs which produced heat or from an indirect action through the nervous system. They found that no fever was produced when the middle brain was removed in animals and infectious material subsequently injected. The infectious fever was therefore the result of toxins which irritated the heat centre of the middle brain.

Fräulein RAHEL HIRSCH read a paper on the Metabolism in Anaphylatoxin Fever. She said that in infectious fever of somewhat long duration the metabolism was increased, but that injections of anaphylatoxin produced fever without an increase of metabolism, which might even be diminished. The metabolism in fever was also diminished by quinine.

Dr. LESCHKE (Berlin) said that the rise of temperature and increase of metabolism in fever were completely independent of each other.

Professor PFEIFFER (Wiesbaden) mentioned some peculiarities of pyrexia in gout. He said that in an acute attack of gout the temperature was almost always between 38·2° and 38·3° C., being higher only in the case of elderly patients in whom several joints were simultaneously affected or when complications were present. Another peculiarity was that the high temperature of gout was favourably influenced by remedies such as colchicum, which were inert in other febrile diseases, whilst antifebrile compounds like quinine were useless in the pyrexia of gout.

Dr. LÜDKE (Würzburg) spoke on the causes of the crisis in fever, expressing the opinion that it was due to sudden and energetic alterations of the protective power of the body against the infection. He had examined the blood in patients suffering from pneumonia before and after the crisis, and had found that in the beginning of the defervescence the antitoxic action of the blood was enormously increased, whilst the number of bacteria in the blood was diminishing.

Professor SCHITTENHELM (Königsberg) read a paper on Experiments concerning the Relation between Fever and Anaphylaxis. He said that in acute cases, which were always fatal, the anaphylactic symptoms consisted in a sudden fall of temperature, convulsions, dyspnœa, and decrease of the leucocytes, whilst in the chronic forms fever, increase of the leucocytes, decrease of the blood pressure, acceleration of the lymphatic stream, and suppression of the coagulation of the blood were observed. He considered that fever and other anaphylactic symptoms were the results of a physical alteration of colloidal substances in the blood.

The Effect of Salvarsan in Scarlet Fever.

Professor JOCHMANN (Berlin) reported that he had treated 117 cases of scarlet fever by subcutaneous injections of salvarsan in small quantities, and that although an infection by the water used for the solution was excluded, slight accompanying effects were produced which, however, were not at all dangerous. The curative action was satisfactory, and the general state of the patients was improved, especially in soporous cases. The inflammation of the tonsils and fauces was favourably influenced, and necrotic portions of tissue were discharged more quickly than usual. Salvarsan had no influence either on complications or on mixed infection with streptococci.

Treatment of Diabetes Mellitus.

Professor LÜTHJE (Kiel) reported that in cases of diabetes mellitus he had introduced solutions of sugar into the rectum by enema. In this way from 50 to 100 grammes of sugar daily were administered without pain and without increasing the sugar in the urine. The quantity of sugar in the blood, however, became greater, showing that the sugar was absorbed from the intestine.

A Cerebral Centre of Renal Function.

Dr. MEYER and Dr. JUNGMANN (Strassburg) reported that they had found in the medulla oblongata a centre which had an influence on the renal function. When a puncture was made into this centre the quantity of urine was increased independently of the quantity of water and chloride of sodium introduced into the stomach. Section of the renal nerves had the same effect, but a puncture into the medulla was then without effect. The increase of urine produced by an injury of these centres must be regarded as partly an irritation of the vaso-dilator nerves and partly a direct stimulation of the renal cells.

Researches on the Blood.

Dr. VEIL (Strassburg) described some regular variations of the concentration of the blood, which were shown by examinations of its refractive power. Even in healthy persons there were considerable fluctuations which disappeared during sleep. In the contracted kidney of arteriosclerosis the concentration of the blood was considerably increased, but could be reduced for a considerable time by means of venesection. In cardiac œdema the determination of the concentration of the blood was valuable as an indication for treatment.

Dr. NAEGELI (Tübingen) said that morphological researches on the blood were now apparently worked out to a finish, but that considerable progress might still be made by physical and chemical methods. The colour of the serum gave important information in anæmia. In chlorosis the serum was abnormally pale, while in pernicious anæmia it was of an abnormally dark yellow colour. The measurement of the refraction and the viscosity of the serum and the plasma gave absolutely identical results.

Dr. BAUER (Innsbruck) said that the coagulability of the blood was decreased not only in Graves's disease but also in other disorders of the thyroid gland, and especially in those connected with cretinism; a similar result was also observed in affections of other glands producing internal secretions. In a case of hæmophilia he had found that the capability of coagulation was so much decreased that the blood had not coagulated after 16 hours. The administration of thyroid substance was then commenced and after a few weeks coagulation occurred in 12 minutes.

Dr. MAGNUS-ALSLEBEN (Würzburg) said that the blood of tuberculous patients brought up during hæmoptysis was sometimes not capable of coagulating. This was apparently caused by the circumstance that in consequence of the tuberculous process substances resembling those present in autolysis became developed. The expressed juice of fresh organs favoured coagulation, but the extract obtained by autolysis hindered it.

In the discussion Dr. REISS mentioned that contraction of muscles increased the concentration of the blood. After sleep the concentration of the blood was therefore rather small.

Dr. MORAWITZ (Freiburg) said that blood of cats or dogs injected into the pleura lost its coagulability because the fibrinogen was altered by the endothelium of the pleura. It must be assumed that the loss of coagulability of the blood in hæmoptysis was also caused by an alteration of the fibrinogen.

Hæmolytic Icterus.

Dr. FRIEDEL KAHN (Kiel) said that of ten typical cases of hæmolytic icterus seven belonged to the hereditary form and three to other forms. In two cases the swollen spleen was successfully removed, the result being that the icterus disappeared and the anæmia likewise. Biliary pigment which had been absent from the urine before the operation was excreted after it for some time, but then disappeared altogether, the metabolism of nitrogen and of uric acid became normal, and the erythrocytes became more resistant. The spleen was obviously the seat of the disease.

(To be continued.)

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Sanatorium Benefits.

THE report of the Sanatorium Subcommittee states that the number of applications received up to May 6th was 1308. During the period March 14th to May 6th 195 cases were sanctioned for treatment. That meant a total expenditure of £1424. In addition, further treatment at sanatorium or dispensary had been sanctioned to 190 cases. Since August 23rd the number of cases sanctioned was 970. The estimated cost of the treatment was: Sanatorium treatment, £6317; dispensary, £1897; preliminary examinations, £327; and shelters, £5. Further treatment: Sanatorium, £451; and dispensary, £733—a total of £9730. The expenditure on sanatorium benefit to March 31st was £4611, the estimated income to that date being £5765. At present the corporation has 163 beds available and a large proportion is given up for insured patients. By the end of August another 62 beds will be available, and under the extension scheme which has been recently sanctioned the total accommodation will be 409 beds, a figure considerably in excess of the number given in the interim report of the tuberculosis committee, but not one more than will be required for Birmingham. An important agreement has been made between the Insurance Committee and the city council by which the Committee will hand over to the corporation all the funds available for sanatorium and institutional treatment, after reserving an amount for incidental and administrative expenses, the corporation to do the whole of the work for them in future. The corporation has been spending £9000 and treating a proportion of the cases. Because of the Insurance Act and the Hobhouse grant, when they get 409 beds, the corporation will be

spending only £1000 a year more than now and will be treating the whole of the cases.

Although the machinery for sanatorium benefit is in good working order, and it seems probable that in the near future sufficient accommodation will be found to treat the whole of the consumptive patients who require public provision, there is a good deal of dissatisfaction in the medical profession with the way in which the treatment is carried out. This is particularly so with the dispensary. A large number of patients get treatment at the dispensary only. Complaint is made that the Health Committee has an exaggerated view of the value of tuberculin, and that it is administered by assistant medical officers of health whose clinical knowledge of consumption and training in tuberculin administration in the nature of things cannot be extensive; pressure is put upon patients to attend the dispensary with the consequence that after notification attendance at the hospitals ceases. Students see few cases in hospital and become insufficiently trained in diagnosis. The proposal was tentatively made that students should obtain their experience at the corporation institutions, as is done in the case of scarlet fever, &c. This, is, of course, unacceptable to the clinical teachers who view with indignation the suggestion that students could learn their work better under officials, whose clinical training may leave something to be desired, than under properly trained and experienced physicians. When the municipal sanatorium was first started its work was carried out under the direct supervision of a visiting physician with special experience in tuberculosis and tuberculin treatment, and the patients treated at the dispensary were carefully selected chiefly from those who had received a preliminary sanatorium training. The post of visiting physician has been abandoned and its occupant was made consulting physician, an honorary position without any powers of control over the methods of treatment. The complete divorce between the tuberculosis work of the Health Committee and the clinical physicians is regarded with concern, especially when it is recognised that plans are already being made for the treatment of surgical tuberculosis.

May 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Certification in Dublin.

LAST Saturday the Irish Insurance Commissioners advertised their intention of appointing medical advisers in respect of insured persons resident in the county borough of Dublin, at salaries of £130 a year, applications for the post to reach the Commission before May 31st. A certain number of insured persons would be assigned to each medical adviser, whose duties would be mainly to examine and confidentially report on anyone so assigned to him who while in receipt of sickness benefit was suspected of malingering. Application to the Commission failing to elicit further information than that appearing in the advertisement, the Dublin Local Medical Committee at a meeting on Monday advised medical practitioners not to apply for these appointments. It is not unnaturally suspected that the Commissioners really aim at medical certifiers to sign all certificates required for the insured, thus excluding the medical attendant from certifying for his own patients.

The Local Government Board and Approved Institutions.

The Dublin division of the British Medical Association last week protested against interference by the Local Government Board in the recent election of a medical superintendent of Peamount Sanatorium.[1] The appointment was in no way subject to the approval of the Board, and the Board had previously expressly disclaimed any power of approval or disapproval. The Board has, however, approving powers regarding institutions for treatment under the sanatorium benefit of the Insurance Act. The question thus raised is more far-reaching than at first appears. Peamount Sanatorium is "approved" by the Local Government Board in the same sense as other sanatoriums and as the various general and special hospitals of Dublin and Belfast. If this claim is conceded the Board would have a like status to interfere in appointments to the staff of any of the other institutions, an interference that could not be tolerated, and if persisted in, would lead to the withdrawal of the voluntary hospitals from all participation in the tuberculosis campaign. The intervention of the Board is the less justifiable in that the newly appointed superintendent of Peamount Sanatorium possesses the qualifications laid down by the Board in sealed order for superintendents of public sanatoriums or tuberculosis dispensaries.

[1] See THE LANCET, May 24th, p. 1493.

The Sanatorium Benefit in Meath.

The Insurance Committee of Meath has discovered that while the estimated expenditure for the year ending July 14th is £817, the estimated receipts are only £585. This appears to be due to a miscalculation by the Insurance Commissioners that the number of insured in the county would be about 16,000, whereas it is only 10,000. Only 40 patients were treated in the tuberculosis dispensary. Meath was one of the counties which contracted with the Women's National Health Association for the administration of the sanatorium benefit. The liability of the Insurance Committee has been taken over by the county council, on condition of the Treasury bearing half.

Nursing Congress in Dublin.

The National Council of Trained Nurses of Great Britain and Ireland is to hold its annual conference in the Royal College of Physicians, Dublin, on June 4th. The State registration of nurses and the training of midwives will be discussed. There will be among other social functions a reception at the Royal College of Surgeons, with a pageant of nursing; a performance at the Abbey Theatre, a dinner in the Mansion House, and a garden party in the Zoological Gardens.

The National Insurance Act.

IN Belfast it appears that out of the 143,000 insured people only 20,000 have so far made choice of the panel doctors who are to attend them; hence the Local Insurance Committee will have to locate the remaining 123,000 people who are insured. It has been decided by the committee to advertise that the insured must select their doctors before June 7th; after that date some other plan will have to be devised as to what doctors they are to select.

Health of Londonderry.

In the annual health report for 1912 of the health of Londonderry it appears the total number of notifiable diseases was only 96—that is, 13 enteric, 1 typhus, 32 scarlet fever, 23 erysipelas, 26 diphtheria, and 1 small-pox. During the 12 months there were 1000 births and 620 deaths out of an estimated population of 40,891, thus giving a natural increase of 380. The birth-rate was 24·5 per 1000 of the population, and the death-rate 15·2 per 1000; the zymotic death-rate was 0·5. The average rainfall for the year was 0·128 in. daily. The provision of a refuse destructor and more public sanitary conveniences are recommended by Mr. J. H. Fergusson, the medical officer of health.

Down District Asylum.

In his annual report for 1912, Mr. M. J. Nolan says 753 inmates were in residence during the year, the number admitted—130—being 8 less than those admitted during the previous year. The net average cost of maintenance was £22 9*s.* 5*d.*, while the net profit of the farm for the year is returned as £1026 8*s.* 4*d.* The continuance of a high recovery-rate, the low death-rate, and the general satisfactory condition of the patients all indicate how well this model asylum is worked.

Pomeroy Dispensary District.

Dr. Alexander Patton, of Cookstown, at the meeting of the board of guardians of that town, held on May 24th, was appointed, at £100 per annum, dispensary doctor and medical officer of health of the Pomeroy District. The chairman said he regretted the salary was so small, but he hoped that at an early date it would be raised.

Presentation to a Medical Practitioner.

A presentation was made to Mr. Philip G. Lee, L.R.C.P. & S. Irel., by the medical practitioners of Munster, at the Cork Medical Society on May 24th, in recognition of the many and eminent services he has rendered to the profession in the South of Ireland and as an expression of the very cordial sentiments they entertain towards him. The

presentation consisted of a carved bookcase, a handsome silver salver weighing 100 ounces, suitably engraved, and a purse of sovereigns.

May 27th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Water Contamination at the Paris Faculty of Medicine.

IN THE LANCET of May 10th I referred to the cases of typhoid fever caused by the admission of Seine water to the water-supply of the Faculty of Medicine of Paris. The Prefect of the Seine has declared that the Faculty of Medicine had received a decree of the Prefecture which forbade it to break the seals of the stopcocks under a penalty of 1000 francs. This penalty the Faculty has been condemned to pay.

Lavage with Ether in Peritonitis.

On May 14th at the Société de Chirurgie M. Morestin recounted two observations by M. Témoin. In severe peritonitis he had obtained unexpected good results following on the use of ether to cleanse the peritoneum. M. Morestin had previously pointed out the good results that had been noted in diffuse peritonitis when treated by flooding of the peritoneum with ether. He has used ether since 1901 in peritoneal infections, both preventively as a disinfectant after a suppurating salpingitis and after an operation in which the abdominal cavity had become soiled by the intestinal contents, and curatively in grave peritonitis consequent on the perforation of ulcers in the stomach, duodenum, and in acute appendicitis. He always uses the following method. After careful cleansing of the peritoneum, ether is poured into the abdominal cavity and pelvis and the walls are closed. The ether begins to volatilise as soon as it is poured in. It gives off copious vapour, and the volatilisation continues after the closing of the wound, for pronounced meteorism ensues. On the pouring in of the ether the patients suffer some distress for a short while, then calm ensues, and the period immediately following operation is relatively tranquil. A sort of torpor follows, during which the pulse is good and vomiting is less frequent. The post-operative conditions are much more favourable, and in most of the cases the convalescence is ideal. The ether acts undoubtedly in several ways. It has a local antiseptic action. It spreads throughout the abdominal cavity. The intestine and stomach are perfused with ethereal vapour without any inconvenience to the serous membrane. No inflammatory action capable of inducing adhesions follows. M. Morestin has never seen any accidents attributable to the vapour in his cases. Finally, the ether has a tonic and an anæsthetic action. The results afforded by the method are difficult to interpret. Intervention in perforated ulcers and in peritonitis of itself gives results of too variable a character. Without wishing to exaggerate the importance of this practice, it at least appears that it offers few inconveniences and requires no special precautions.

Tuberculosis among Post-office and Telegraph Employees.

Statistics compiled by Professor Landouzy show that in 1902 15 per cent. of the deaths among French post-office employees were due to tuberculosis. In 1903 the percentage was 17; it reached 21 in 1904. To-day it is estimated to exceed 30 per cent. The cause is attributed largely to the insufficient air and light in the offices. At Montauban tuberculosis kills two or three employees every year. Recently new buildings have been begun. The post-offices, even of Paris itself, are hardly fit; save in the large central offices, where the cleansing is done by contract, the work devolves on the subagents, factors, or telegraph clerks, and it is not well done. The postmen are not much better off. In the shaking and the dust of the trains they have to handle many hundreds of mail sacks every night. These sacks are dragged hither and thither in the waiting-rooms and along the platforms and are never cleaned, for no money is voted for the purpose. A Bill has been brought in by the Government to provide for the post-office employee suffering from tuberculosis six months' leave on full pay and four years and a half on reduced pay, the amount not to fall below 1200 francs or to rise above 2400 francs. But light, airy, scrupulously cared for and disinfected offices are needed, as well as effective checks on overwork. The work daily increases and becomes more complicated. The necessary credits must be granted to the administration.

Alcohol and Insanity.

M. Magnan and M. Filassier have been investigating the effects of alcohol on the individual and his descendants. Their data have been obtained as follows. All the insane in the Department of the Seine before admission to the various asylums have been sent since 1867 to the Clinic at Sainte-Anne, where they have undergone a preliminary examination. A *dossier* has thus been established for each one, in which are brought together the medical certificates, the clinical facts observed, and the information furnished by the relations or the *entourage* of the patients. M. Magnan and M. Filassier have examined this accumulation of documents, and the figures furnished by them are disquieting enough. From 1801 to 1868 the number of women admitted to the asylums was greater than that of men. The proportion became reversed as soon as alcohol began to be consumed in its current extent. The number of insane alcoholics has increased from year to year with an alarming rapidity. In 1868, out of the entire entry to asylums, 14 per cent. of male alcoholics and 1·85 per cent. of female alcoholics were noted. From 1887 the statistics comprise not only simple alcoholics—that is, those who owe their madness solely to excess in drink—but also psychopaths, for the most part the descendants of alcoholics in whom alcohol has been only the exciting cause that has revealed their hallucinations. Startling figures have thus been brought to light. In 1888 there were 35 per cent. of men; 16 per cent. of women. In 1910 47 per cent. of men and 20 per cent. of women. Unfortunately the drunkards are not sterile, and the children carry for a long time the burden of their original taint. Out of 3271 children Dr. Bourneville has noted that in 1156 cases the father had been an excessive drinker, in 100 cases the mother, and in 53 cases both parents. In 358 cases it was not possible to get any information. These figures, however, are below the truth, especially so far as alcoholism in the mother is concerned, which unhappily becomes more and more frequent. Out of 1000 children of alcoholics, according to M. Magnan and M. Filassier, about a third die at birth or in the first two or three years of life, and among the survivors are found numerous idiots, epileptics, and many degenerate defectives, with perverted instincts, impulsive, abnormal, the painful victims of parental alcoholism.

May 26th.

ITALY.

(FROM OUR OWN CORRESPONDENTS.)

The Regina Elena Nursing School.

ON March 31st in the reception hall of the Quirinal H.M. Queen Elena presented their diplomas to the 16 nurses who have completed their two years' training, and personally pinned upon their breasts and upon those of the nine English nurses who have served for two years as teachers in the school a silver medal struck for the occasion. H.M. the King was present at the ceremony with several of his Ministers and a large company representative of the society of the capital and the professional world. The school, which now numbers 55 probationers, is under the direction of Miss Dorothy Snell and other English nurses. It owes its institution to the initiative of Queen Elena, whose personal example after the earthquake of December, 1908, has done much to raise the status of nursing in Italy.

The Croce Rossa in Montenegro.

A good deal of resentment has been excited in Italy at the treatment accorded to the Croce Rossa Italiana in Montenegro. A complete field hospital was despatched from Bologna under the charge of Professor Nigrisoli. This for unexplained reasons was never allowed to proceed to the front, but was kept at Podgoritza, two days' march from the theatre of war. Besides the treatment of the sick and wounded from the front Professor Nigrisoli opened an out-patient clinic in the city, and gave free treatment to all comers without distinction. Both hospital and clinic were

freely made use of, but the surgeons were considered in the light of servants very properly sent by Queen Elena of Italy to her native land and treated with scant consideration. Professor Nigrisoli himself was nearly the victim of a shooting outrage one evening when making the rounds of the city with the sanitary officer. A Red Cross unit from Turin did splendid service at the front for six months, always under fire. On the fall of Scutari Prince Mirko announced the fact to the Italian Red Cross officers in these words: "All is over, gentlemen. You may return to Italy," without any thanks for a recognition of the services rendered.

The Nun of Viterbo.

Viterbo is in mourning for the death of Sister Maria Benedetta, in the world Penelope Frey. Born in Rome in 1836, she entered the convent of the Duchesse at Viterbo in 1856. In 1861, at the age of 25, she became the victim of paralysis, which spared her nothing but her intelligence, her speech, and the use of her right hand. The cause was spinal caries, which occasioned such damage to the vertebræ that it was necessary to support the head by a bandage the ends of which were fixed by nails to the wall behind her bed. In this position she has remained for 52 years until her death on May 10th of this year. At first she was not expected to live for more than a few months, but as years passed by the common people began to believe that she could not die. Her resignation, cheerfulness, and piety gained fresh lustre from the tales told of her supernatural predictions, so that for the last ten years the ecclesiastical authorities have relaxed the strict rule of the "clausura" and permitted to the devout, the sick, and the afflicted free access to the saint. Two years ago she celebrated a kind of jubilee of her martyrdom, when the Pope sent her an autograph letter carried by Cardinal Casselta. Cardinals, archbishops, prelates, and people of all classes met in her cell. Queen Margherita visited her often, and sent her skilled nurses from Rome to attend her.

May 15th.

THE NATIONAL INSURANCE ACT.

LONDON INSURANCE COMMITTEE.

A PROTRACTED meeting of the London Insurance Committee was held on May 22nd, when several questions of medical interest were considered.

The Medical Benefit Subcommittee recommended that the moneys accumulated in respect of insured persons who had not chosen a doctor be distributed in proportion to the number of insured persons up to 2000 on each practitioner's list on April 14th. Mr. ROCKLIFF, however, raised the legal point whether the Committee was entitled to distribute the money at this time. Many committees have already distributed these accumulated funds in various ways, but the chairman of the London Committee regarded Mr. Rockliff's point as of such importance that he promised to call a special meeting to consider it. No distribution of the accumulated funds, which amounted to some £35,000, therefore took place.

Pursuant to the instruction of the Committee at its meeting on April 3rd[1] several reports were submitted having for their object the improvement of the insurance medical service in London. The first of these suggested that questions concerning the technical, scientific, or medical detail of the treatment provided by a practitioner should be referred, not to the Medical Service Committee, on which the medical representation is three out of seven, but to a special committee consisting entirely of the medical members of the Insurance Committee. The advantages of this were strongly urged in debate by medical speakers, and the proposal found general acceptance, the hope being expressed that this action by the Committee would convince the medical profession that there was no desire for lay interference in purely medical affairs, and that there would be a large accession to the panel in consequence. The proposal was carried unanimously.

Another proposal aimed at the improvement of the medical service had only been in the hands of the Committee a few hours, and its consideration was therefore adjourned until the special meeting already referred to. This proposal was the extension of contracting out to the following classes: (1) sons and daughters of well-to-do parents; (2) banks clerks and others who, being in a position to make extra payment, desired to continue treatment received from the family doctor not on the London panel; and (3) other cases of an exceptional nature, where a person desired to make extra payments to his doctor, or where a doctor, through age or the extent of his practice, was unable to join the panel, even for a limited number. At the same time, the subcommittee deprecated anything like wholesale contracting out.

A resolution in favour of the appointment of a medical referee occupied the committee for some time. Representatives of the medical profession and of the Approved Societies alike spoke in sympathy with the proposal; in fact, Mr. WHITAKER THOMPSON was the only member who opposed, and he made the ingenious suggestion that malingering was prevalent just now because people had been paying for nine months and had only been in benefit for three months. He thought also that a medical referee would be doing work which doctors on the panel had contracted to perform. In reply to this it was urged that doctors on the panel could hardly be expected to include the detection of the astute malingerer in their duties.

Ultimately the resolution in favour of the appointment was carried by a large majority.

Next Mr. ROCKLIFF moved a resolution expressing the opinion that it was undesirable for any doctor on the panel to undertake the treatment of more than 2000 insured persons, and this led to considerable debate. Lay members freely expressed the opinion that insured persons on the list of doctors who had accepted large numbers were not getting proper treatment. Mr. EVAN JONES expressed agreement with the view that 2000 was a sufficient number for one doctor to accept.

Sir SHIRLEY MURPHY, Dr. LAURISTON E. SHAW, and Dr. H. H. MILLS, however, took the view that the present time was premature to limit the lists. Dr. Shaw urged that the exercise of free choice of doctor would right the matter automatically, and Dr. Mills, endorsing this, wished that the choice could be exercised at the end of six months instead of 12.

The Chairman (Mr. J. A. DAWES, M.P.) explained, in answer to a question, that the resolution if carried would only express an opinion and not have legal force.

The motion was carried by 13 votes to 7.

[1] THE LANCET, April 12th, 1913, p. 1062.

THE HYDE LECTURES.—On May 20th and 21st Dr. William Gordon, of Exeter, delivered these lectures at the Royal Society of Medicine's house, before the Section of Balneology and Climatology, taking as his subject "The Place of Climatology in Medicine." Sir Hermann Weber, president of the section, took the chair at the first lecture, and at the second lecture Dr. F. Parkes Weber acted as chairman in the place of Dr. I. Burney Yeo. Sir Hermann Weber, in introducing the lecturer, said that Dr. Gordon had already done good work in medical climatology, and alluded to his papers on the influence of rain-bearing winds on tuberculosis in some valleys of Devonshire. In proposing a vote of thanks to Sir Hermann Weber for presiding Dr. Leonard L. B. Williams dwelt on the pioneer work which the chairman had done in the cause of climatology. In seconding this vote Dr. R. Fortescue Fox said that the lecture which they had just heard constituted an important incident in the history of medical treatment, adding that he could not but feel, as Dr. Gordon unfolded so lucidly the large field of the possible applications of medical climatology in health and disease, that they were being conducted to the frontiers of a vast country, of which they were still in ignorance, though in future years, possibly only for their successors, a vast body of useful knowledge would be available, by means of which climatic agencies would be applied with scientific precision, not only to the prevention of disease, but to the cure of chronic disease. Dr. Parkes Weber, at the conclusion of the second lecture, in proposing a vote of thanks to Dr. Gordon, alluded to the lecturer's investigations on the relation of winds to pulmonary tuberculosis, to the examination of the blood and respiration on Pike's Peak by Dr. J. S. Haldane and Dr. Douglas, to Dr. Leonard Hill's well-known experiments in aërotherapeutic directions, and to the results obtained by "heliotherapy" as examples of practical good coming from the medical study of climatology.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, MAY 27TH.

THE General Council of Medical Education and Registration began its summer session to-day at its offices, 299, Oxford-street, W. The President, Sir DONALD MACALISTER, was in the chair.

The President's Address.

The PRESIDENT delivered his address. He said:—

GENTLEMEN,—A year ago we welcomed Dr. George A. Gibson as a new member of the Council. At that time his great professional reputation encouraged us to look to him for long and valuable service as a colleague. Our hopes have now been frustrated by his untimely death. The expressions of regret which have come from those who best knew what he was and what he had achieved serve to measure the greatness of our loss. We can but offer our sympathy to his bereaved family and friends, and record our own sorrow for the too-early close of his career of high purpose and endeavour. In his place the Royal College of Physicians has appointed Dr. William Russell, a Fellow of the College, whose varied activities have won for him a prominent position among our Scottish brethren.

In my address last November I mentioned the steps that were taken to give effect to your resolution regarding the Government of Ireland Bill. Amendments to the Bill were duly proposed for the purpose of ensuring that the control of legislation relating to the Medical and Dentists Acts should be reserved to the Imperial Parliament. At first it seemed likely that the amendments might be favourably regarded by the House of Commons; but in the end, for reasons that had no apparent relation to the merits of your proposal, the Government opposed its adoption, and it was rejected. The Minister in charge of the Bill, and other Members of the House, have expressed the opinion that, even in the absence of restrictive provisions, the Irish Government would not be likely to propose any local legislation which might have the effect of invalidating the general currency of professional qualifications granted in Ireland. Experience alone can show whether that opinion is well founded. Under the procedure laid down for the further progress of the Bill it is doubtful whether the Council will have any other effective opportunity of calling the attention of Parliament to its views on the subject. If such an opportunity should arise, it may, I think, be assumed that your instructions of last June are still operative.

The Bill of the Lord President of the Privy Council, for amending those provisions respecting the election of Direct Representatives which experience has shown to cause inconvenience and waste of public money, passed the House of Lords, and was read a first time in the House of Commons. Before the second reading, however, notices of motion by private members were placed on the order paper, which had the effect of blocking the progress of the Bill. The terms of these notices suggested that the members responsible for them had misapprehended both the functions of the Council and the scope of the Bill itself. Efforts were made through the proper channels to remove these misapprehensions. Before they were successful the end of the session approached; and, as the Government was unable to find time for a prolonged second-reading debate, the Bill was withdrawn. So far as I can ascertain, the circumstances of the present session of Parliament are not favourable to its reintroduction. It is, however, satisfactory to know that the Government has recognised the imperfection of the statute under which our election regulations are made by the Privy Council, and that the Lord President has made a serious effort to procure its amendment in the interest of a more economical procedure.

In pursuance of your instructions respecting the National Insurance Act, the special committee has been active in considering the various professional questions to which its attention was directed and in sending representations thereon to the Insurance Commissioners and other authorities concerned. The committee met in January, and had before it the revised Regulations for the Administration of Medical Benefit issued by the Commissioners. It was gratified to observe that practical effect had been given to its suggestions for the amendment of the draft regulations, except in regard to the important question of "hospital or institutional treatment for insured persons requiring services beyond the competence of an ordinary medical practitioner." That question, it is now stated, cannot be dealt with by regulations; it will require an amending or supplementary Act of Parliament. Under one of the forms of agreement appended to the Regulations it appeared that, in cases requiring a surgical operation, no special provision was made for the administration of anæsthetics by a qualified person other than the operator himself. The committee has called the attention of the Commissioners to the resolution of the Council on this subject, dated Nov. 27th, 1909, and has urged upon them the desirability of sanctioning arrangements whereby the safeguard contemplated in that resolution may be secured to insured persons under all forms of agreement with practitioners engaged in the National Insurance service. Communications on the subject are still taking place, but no formal deliverance has yet been issued by the Commissioners.

While the Departmental Committee on Tuberculosis was considering its report, certain questions connected with the administration of "sanatorium benefit" under Section 16 of the Act were confidentially submitted to your committee for consideration, and its comments on the provisional resolutions of the Departmental Committee were requested. The request was complied with, and a carefully considered reply was forwarded to the Committee. The recommendations of the report, which has since been presented to Parliament and transmitted to the office for information, made it clear that weight has been attached to the views expressed by the National Insurance Act Committee on the Council's behalf.

During the early months of the year, while committees, societies, and practitioners were actively engaged in discussing and elaborating the measures to be taken for setting up the National Insurance service, numerous communications were received by the Registrar suggesting that particular bodies or persons, some favouring the institution of the service and others opposing it, were resorting to methods of advertising or canvassing of a kind to which objection might justly be taken by the Council. As it seemed likely that the warning notices already issued by the Council in relation to such methods were imperfectly known or understood, copies of these were forwarded to the Insurance Commissioners for their information, and were also communicated to the press and to the various bodies and persons who appeared to be concerned. Steps are now in progress for circulating the notices still more widely among societies, committees, and others engaged in the administration of medical benefit throughout the kingdom. It is to be expected that, when they are fully informed of the conditions proper to professional service, these bodies will realise that it is necessary, in the discharge of their important functions, to guard against the introduction of methods that are inconsistent with right standards of professional conduct. Up to the present no formal complaint which is in accordance with the standing orders relating to cases for inquiry by the Council has been received in respect of any practitioner. Personally, I am not without hope that, when the uncertainty and unrest naturally accompanying the establishment of an unfamiliar system of medical practice shall have ceased to be felt, the cautionary measures adopted by the Council will obviate all occasion for formal complaints and inquiries under this head.

A further advance has been made in the direction of medical reciprocity within the Empire by the application to the colony of Hong-Kong of Part II. of the Medical Act, 1886. In the opinion of the Executive Committee, the legal conditions affecting the practice in that colony of practitioners registered in the United Kingdom were equitable, and afforded a just basis for establishing the reciprocal relations contemplated in the Act. This opinion was communicated to the Privy Council on Feb. 24th, and on March 7th His Majesty in Council was pleased to issue the necessary Order. The Executive Committee has considered the regulations regarding courses of study and examinations prescribed for degrees in medicine and surgery by the new University of Hong-Kong, and finding these to be sufficient to guarantee the efficiency of its graduates, the committee

proposes to recognise such degrees as qualifying for registration in the Colonial List.

The Medical Council of Canada assembles next month in Ottawa, and will proceed to formulate regulations governing the licensing and registration of practitioners throughout the Dominion. We must wait until we are informed of the precise conditions under which practitioners registered in this country will be admitted to the Register of Canada and to the privilege of practising within its territory before we make a representation to the Lord President on the subject of reciprocity with the Dominion as a whole. We have every reason to expect that acceptable conditions will be proposed. In the meantime the Province of New Brunswick proposes, by an amendment of its Medical Act of 1903, to admit to its own Register "any person desirous of practising in New Brunswick who is duly registered by the General Medical Council." The Legislature of Newfoundland has also, by a recent enactment, assimilated its local law to that of other parts of the Empire, and now prescribes for practitioners a curriculum of five years, instead of the four years which have hitherto sufficed.

Last year the Finance Committee reported with regret that in 1911 the income of the Council and its branch councils fell short of its expenditure by £1370. This year it is able to show that in 1912 there was a surplus of income over expenditure amounting to £1105. The receipts from registration fees are larger by some £500; and the outgoings, thanks mainly to shorter sessions of the Council and to economies effected by the efforts of the treasurers and the registrar, are considerably smaller. It is satisfactory also to note that the number of students registered at the commencement of their curriculum has risen by 165, and now coincides with the figure representing the average for the preceding five years. It would appear that the misgivings regarding the future of our profession, which were freely expressed during the unsettlement of last year, have exercised no deterrent effect on the body of youthful recruits. Their faith may prove to be wiser than our forebodings.

During the five years 1907 to 1911 inclusive, the accounts showed a net accumulated deficit of about £1370. The surplus of 1912 reduces the accumulation to some £270. Should we this year be spared the necessity either for long sessions, or for by-elections under the costly regulations now in force, we may count with some confidence on wiping out the unfavourable balance altogether. Every proper means to this desirable end will, I feel sure, continue to be taken by the officers of the Council.

I do not propose to anticipate the reports of the standing committees, now in a forward state of preparation, by touching on their probable contents. But I do wish to assure the Council, of my own knowledge, that the chairmen of these committees and their colleagues have spent much thought and labour upon them, that much correspondence and consultation of authorities have been required, and that the conclusions reached deserve the Council's careful consideration. For those who are charged with the guidance of these committees, the period of recess is sometimes more laborious than the period of the Council's session.

After we have completed the formal business necessary at the opening of the session, it will be my duty to lay down the office which this day five years ago you were pleased to commit to my hands. I owe it to the devotion of the members and officers of the Council, and to their ready response to every call made upon them, if it should appear to you that my tenure of the office has not greatly failed to meet your expectations. I cannot be ignorant of its shortcomings from my own hopes and desires; but I ask you to believe that these shortcomings are due to defect of power, not of will, to do better.

Dr. LITTLE moved that the President be thanked for his address, and this was agreed to.

A New Member.

Dr. WILLIAM RUSSELL took his seat on the Council as the representative of the Royal College of Physicians of Edinburgh for five years in succession to the late Dr. G. A. Gibson.

Service Competitions.

Tables were received showing the results of competitions for commissions in (*a*) the Naval Medical Service; (*b*) the Army Medical Corps; and (*c*) the Indian Medical Service.

On the motion of Sir CHARLES BALL it was agreed that the thanks of the Council should be conveyed to the Director-General of the Medical Department of the Royal Navy, the Director-General of the Medical Department of the Army, and the Under Secretary of State for India respectively for the returns which they had again furnished to the Council.

Re-election of President.

Mr. TOMES took the chair in the place of Sir Donald MacAlister, the retiring President, who left the Council Chamber.

Dr. NORMAN MOORE said: I think I shall be expressing the unanimous feeling of this meeting of the Council if I propose that Sir Donald MacAlister be again elected President of the General Medical Council for the usual term of five years.

Sir HENRY MORRIS seconded.

The motion was then agreed to unanimously, and the newly elected President was summoned into the Council chamber and informed of his re-election.

The PRESIDENT said: I cannot sufficiently thank you for the unanimity with which you have again imposed the heavy responsibility of the President's office upon me, and I hope I shall merit your confidence in performing the duties which you have put upon me.

Appointment of Committees.

The committees were appointed as follows:—

Penal Cases Committee.—Dr. Saundby, Mr. Tomes, Dr. Norman Walker, and Sir C. Nixon.

Executive Committee.—Dr. Norman Moore, Sir Henry Morris, Mr. Tomes, Dr. Langley Browne, Mr. Hodsdon, Dr. Norman Walker, Sir John Moore, and Sir Charles Ball.

Business Committee.—Dr. Norman Moore, the President, Sir Henry Morris, and Sir C. Nixon.

Pharmacopœia Committee.—The President (chairman), Dr. Norman Moore, Sir George Philipson, Dr. Caton, Dr. Barrs, Sir Thomas Fraser, Dr. Cash, Sir John Moore, and Sir William Whitla.

Finance Committee.—Mr. Tomes (chairman), the President, Sir Henry Morris, Mr. Hodsdon, and Dr. Little.

Dental Committee.—The President (chairman), Sir Henry Morris, Mr. Tomes, Mr. Hodsdon, and Sir Arthur Chance.

Dental Education and Examination Committee.—Mr. Tomes (chairman), the President, Sir Henry Morris, Mr. Hodsdon, Dr. Knox, Sir Arthur Chance, and Sir Charles Ball.

Students' Registration Committee.—Dr. Norman Moore (chairman), the President, Dr. Langley Browne, Dr. Mackay, Dr. Norman Walker, Dr. Adye-Curran, and Sir C. Nixon.

Medical Degrees of the University of Calcutta.

A report was received and was entered on the minutes from the Executive Committee in regard to an application which was made through the India Office for the recognition of the degrees of Master of Surgery and Master of Obstetrics, and the diplomas in Public Health of the University of Calcutta. The following resolution had been passed by the committee:—

(1) That the committee on behalf of the Council under Standing Order VII., 19, now agree to recognise the M.S. and M.O. degrees of the University of Calcutta; (2) that the Secretary of State for India be informed that under the Medical Act, 1886, Section 21, the Council has no power to recognise any qualifications in Public Health except those granted in the United Kingdom.

Medical Degrees in Hong-Kong and Bombay.

The Council then received from the Executive Committee a report that Part 2 of the Medical Act, 1886, having been extended by an Order in Council to the colony of Hong-Kong, it had considered the conditions under which medical qualifications granted in the colony should be recognised for registration in the Colonial List of the Medical Register of the United Kingdom. The committee had further adopted the following resolution:—

That the committee, on behalf of the Council under Standing Order VII., 19, now agrees to recognise the degrees in medicine and surgery of the University of Hong-Kong granted after examination for registration in the Medical Register.

The committee further reported that in accordance with the powers conferred on it by the above standing order it had directed the Registrar to add the degree of M.S. of the University of Bombay to those granted by that University to which recognition had been previously accorded.

The report was ordered to be entered in the minutes.

Medical Practitioners on the Dentists Register.

The Executive Committee reported that a communication had been received from the British Dental Association

requesting that practitioners possessing a dental qualification who were registered in the Medical Register might be permitted to register on the Dentists Register for a reduced fee.

The committee recommended that the standing order should be amended as follows:—

(a) *Medical Registration.*

1. For qualifications obtained after Jan. 1st, 1859, and registered in the Medical Register, £5, except in the case of practitioners who are already registered in the Dentists Register, who shall pay a fee of £2.

(b) *Dental Registration.*

1. For the original registration of dental qualifications or certificates in the Dentists Register, £5, except in the case of practitioners who are already registered in the Medical Register, who shall pay a fee of £2, and for each qualification or certificate subsequently registered £1.

Mr. TOMES moved that the Council should adopt these recommendations of the Executive Committee. He would only say that the Finance Committee and the Treasurer and the Registrar, being always on the outlook for money, saw that such a reduced fee as this might induce practitioners who had dental qualifications as well as medical to place their names on the Dentists Register. There was no necessity for these gentlemen to do so now.

Sir HENRY MORRIS seconded.

The motion was agreed to.

Finance Committee's Report.

Mr. TOMES submitted the report of the Finance Committee, which showed that the income of the General and Branch Councils for the year 1912 was £8247. The expenditure during the year was £7142. Consequently there was a surplus for the year of £1105. The expenses of the General Council showed a reduction of £942, and an increase of income had coincided with a decrease of expenditure. The committee saw no reason at present to anticipate that the accounts would be otherwise than satisfactory at the end of the year. Mr. Tomes said that the President in dealing with the finance of the Council in his presidental address had stolen his fire, and accordingly there was very little to be added to what the President had already said. The result was very satisfactory in that they had a surplus over the year instead of a deficit, but the surplus did not quite wipe out the deficit of last year. In this connexion he must call the attention of the Council to the zeal which the Registrar had shown in bringing about economies, for this had contributed to the satisfactory position in which they found themselves. In conclusion, he moved the adoption of a recommendation, that if it be necessary a grant of £100 should be made to the Irish Branch Council from the funds of the General Council.

Dr. LITTLE seconded, and the recommendation of the Finance Committee was agreed to.

The Council adjourned.

Restorations to Medical Register.

The PRESIDENT announced that the names of Allan Douglas Cameron and Robert Kirk had been restored to the Medical Register.

WEDNESDAY, MAY 28TH.

The Council was occupied with the hearing of complaints against practitioners.

CENTRAL LONDON OPHTHALMIC HOSPITAL.—A dinner for past and present students of this hospital was held on May 21st at the Café Royal, London, W., Mr. Ernest Clarke, senior surgeon, presiding, and those present included the Dean, the members of the surgical staff, Mr. M. L. Hepburn, Mr. A. C. Hudson, Mr. Sydney Stephenson, Mr. Leslie Paton, and other visitors. Mr. Clarke proposed the toast of "The Hospital and its Medical School," and spoke of its growth and success during the past few years; also of the fine new building which had lately been opened in Judd-street, W.C. Mr. M. S. Mayou, the Dean, in reply to the toast of "The Medical School," pointed out that its prosperity now seem assured with the splendid new quarters for them, which would give such excellent teaching facilities. The chairman proposed the toast of "The Visitors," which was responded to by Mr. Stephenson and Mr. Paton, both of whom expressed their admiration of the new hospital and their belief in its assured success. The toast of "The Chairman," proposed by Mr. A. Levy in suitable terms, concluded the proceedings.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—E. L. Jones (Sections I. and II.), Guy's Hospital; E. M. Morris (Section II.), Charing Cross Hospital; T. B. Paul (Section I.), Middlesex Hospital; and C. G. Waddington (Section I.), Leeds.

Medicine.—S. H. Andrews (Sections I. and II.), St. Bartholomew's Hospital; P. R. Cross (Section I.), St. Mary's Hospital; A. C. Dickson (Section II.), Guy's Hospital; T. H. W. Idris (Section II.), University College Hospital; E. L. Jones (Sections I. and II.), Guy's Hospital; and W. R. Sadler (Sections I. and II.), St. Bartholomew's Hospital.

Forensic Medicine.—S. H. Andrews, St. Bartholomew's Hospital; P. R. Cross, St. Mary's Hospital; E. L. Jones, Guy's Hospital; A. Y. Massey, Toronto University College Hospital; and W. R. Sadler, St. Bartholomew's Hospital.

Midwifery.—D. T. Corke, London Hospital; W. H. Edmunds, St. Mary's Hospital; and E. L. Jones, Guy's Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—A. C. Dickson, W. H. Edmunds, E. L. Jones, and E. M. Morris.

MEDICO-LEGAL SOCIETY.—The annual general meeting of this society will be held at the Holborn Restaurant, London, W.C., on Monday, June 23rd, at 6 P.M.

THE Bournemouth town council, at a special meeting recently, conferred the honorary freedom of the borough upon Dr. J. Roberts Thomson, consulting physician to the Royal Victoria Hospital, Bournemouth.

UNIVERSITY OF BIRMINGHAM.—The Ingleby lecture for 1913 will be delivered on Thursday next, June 5th, at 4 o'clock, in the medical lecture theatre of the University, by Professor J. T. J. Morrison, surgeon to the Queen's Hospital. The subject of the lecture will be "Spinal Anæsthesia by Tropacocaine," with a review of 1000 cases.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—The syllabus has now been issued of a summer session course to be held from June 9th to June 20th, 1913. Names of those wishing to attend should be sent not later than June 6th to the Dean of the College, Prince of Wales's General Hospital, Tottenham, N., or to the Vice-Dean, 25, Berkeley-square, W.

COLONIAL NURSING ASSOCIATION.—The annual meeting of this association will be held on Tuesday, June 10th, at 3.30 P.M., at the Royal Colonial Institute, Northumberland-avenue. H.R.H. Princess Henry of Battenberg, patroness of the association, will be present, and Lord Ampthill will preside. The speakers will include Sir Henry McCallum, Sir Richard Solomon, Sir Charles Lucas, and Sir Ronald Ross.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE.—A very interesting and enjoyable reception was given by Mr. G. F. Marshall, chairman of the West London Hospital, in the out-patient hall of the hospital on the evening of May 21st. Instruction and amusement were offered for the choice of the guests. The first was available in the shape of displays of optical and ophthalmoscopic apparatus by Messrs. W. Dixey, Messrs. G. Spiller, and Messrs. Reiner and Keeler, Limited; of surgical instruments and electrical apparatus, by the Cavendish Electrical Company, Messrs. Arnold and Sons, Messrs. Down Bros., Messrs. Krohne and Sesemann, the Holborn Surgical Instrument Company, and Messrs. Mayer and Meltzer; scientific apparatus by Messrs. H. F. Angus and Co.; orthopædic specialities by Messrs. Walton and Curtis; and medical publications by Messrs. H. Kimpton and the University of London Press. Interesting exhibitions of the trypanosome, kala-azar and other parasites were given by Dr. R. R. Elworthy; and of radiographs, X ray apparatus, solid carbon dioxide, and so forth by Dr. E. Reginald Morton, assisted by Messrs. Newton and Wright, Limited. The entertainment of the guests was provided for by the London Viennese Band, a bioscope display by Ruffell's Imperial Bioscope Syndicate (which included pictures taken in the field during the Balkan war), and particularly by a really remarkable display of conjuring, and a still more remarkable exhibition of "thought reading" by Mr. R. Anders. Blindfolded and without contact with anyone, he performed almost instantly and without hesitation two tasks imposed

on him in thought by two medical men in the company. The third effort was successful only partially, in so far that the person thought of was selected out of a hundred or more in the room, though the thing to be done failed of execution.

DONATIONS AND BEQUESTS.—The late Miss Dow, of Montreal, has left £20,000 for the permanent endowment of the hospital of Gujarat.—Miss Jeanie Pollock has left £10,000 to Glasgow University for a materia medica research lectureship and to the Victoria Infirmary a sum of £10,000.

DR. BARNARDO'S HOMES.—Although a large number of the children when received into these Homes are in an emaciated condition and physically afflicted in various ways, the death-rate last year was only 5·15 per 1000. 17,191 children in all were dealt with during the year, and nearly 9000 are always in residence.

ROYAL NAVY MEDICAL CLUB.—The annual dinner of this club was held on May 23rd. The President on this occasion was Surgeon-General Arthur W. May, Medical Director-General, and the guests of the club included Sir Thomas Barlow, President of the Royal College of Physicians of London; Sir Rickman J. Godlee, President of the Royal College of Surgeons of England; Sir Archibald Geikie, President of the Royal Society; and Surgeon E. L. Atkinson, who has recently returned from the Antarctic. Professor Harvey Littlejohn, Dean of the Faculty of Medicine, Edinburgh University, and Mr. W. Girling Bell were also present as guests. There was a large attendance of members and the meeting was in every way successful. The toast of "The King" was followed by that of "Our Guests," proposed by the President and responded to by Sir Thomas Barlow. Surgeon-General Sir James Porter, late Medical Director-General, then proposed the toast of "The President of the Dinner," and in his reply Surgeon-General May gave expression on behalf of the Service to the universal esteem held for Sir James Porter and the regret at his retirement. Among the members of the club present were the following: Surgeon-Generals: J. J. Dennis, Charles James, A. J. J. Johnston, Arthur W. May, C.B., Christopher Pearson, K.H.P., and Sir James Porter, K.C.B., LL.D., K.H.P. Deputy Surgeon-Generals: R. Gavin Brown, W. M. Craig, F. J. Lilly, Lawrence Smith, M.V.O., and G. Welch. Inspector-Generals: Henry Macdonnell, C.B., and Belgrave Ninnis, C.V.O. Deputy Inspector-Generals: F. A. Jeans and J. McC. Martin, D.S.O. Staff-Surgeons: F. Bolster, A. A. Forrester, H. Hunt, L. Lindop, J. McCutcheon, F. G. McKenna, C. A. G. Phipps, P. D. Ramsay, E. G. Swan, and T. B. Shaw. Fleet-Surgeons: W. G. Axford, A. S. G. Bell, P. W. Bassett-Smith, C.B., F. W. A. Clayton, J. Chambers, W. R. Center, Sydney Croneen, E. C. Cridland, R. A. Fitch, A. Gaskell, Robert Hill, C.V.O., D. W. Hewitt, A. F. Harper, J. A. Keogh, M. H. Knapp, Antony Kidd, W. L. Martin, D. J. P. McNabb, P. M. May, R. C. Munday, J. A. Moon, C. J. Mansfield, M.V.O., J. Moore, R. S. Miller, C. L. Strickland, J. W. O. Underhill, A. E. Weightman, G. W. P. Waters, and E. C. Ward. Surgeons: A. F. Fleming, A. B. Marsh, J. H. B. Martin, N. C. Ridley, Campbell Ross, and G. T. Verry.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Mental Deficiency and Lunacy (Scotland) Bill.

THE text of the Mental Deficiency and Lunacy (Scotland) Bill which was presented by Mr. MCKINNON WOOD in the House of Commons on May 7th has been printed and shows several differences from the scheme of the corresponding measure for England and Wales.

Part 1 of the Bill concerns the power and manner of dealing with defectives. Under Clause 1 mentally defective persons are classified as (*a*) idiots, (*b*) imbeciles, (*c*) feeble-minded persons, and (*d*) moral imbeciles. Clause 2 lays down that it shall be the duty of the parents or guardians of children between 5 and 16 years of age who are defectives within the meaning of the Act to make provision for the education, or for the proper care and supervision of such children, as the case may require, to the satisfaction of the school board of the district in which they reside. In the case of poor persons the duty of making suitable provision is laid upon the school board. When defectives attain the age of 16 it is to be the duty of the parish council to take steps to secure that defectives, who cannot be looked after by their parents or guardians, shall be dealt with by being sent to institutions or placed under guardianship in accordance with the Bill.

Other clauses lay down the powers to deal with defectives at the instance of, or with the consent of, parents or guardians or to deal with them otherwise. Provision is taken for the establishment of institutions for defectives of criminal, dangerous, or violent propensities, and for the certification of other institutions for the reception and control, care, and treatment of the defectives.

The General Board of Commissioners of Lunacy in Scotland is to be reconstructed, and the members are to be designated Commissioners of the General Board of Control for Scotland. District boards of control are also set up. Contributions are to be made by the Treasury towards the expenses of persons detained in certified institutions or placed under guardianship as defectives. It is made an offence to supply intoxicants to a defective person contrary to warning, and special protection is given to female lunatics or defectives.

The Parliamentary Session.

Both Houses of Parliament resumed their sittings on Tuesday, May 27th, after the Whitsuntide holidays.

Mental Deficiency Bill.

On Wednesday, May 28th, Mr. MCKENNA, the Home Secretary, moved the second reading of the Mental Deficiency Bill. He explained its provisions in detail. Opposition to it was offered by Mr. WEDGWOOD, Mr. BOOTH, and Mr. ATHERLEY JONES. The motion was still under discussion when the House adjourned.

HOUSE OF COMMONS.

TUESDAY, MAY 27TH.

A Camberwell Inquest.

Mr. W. THORNE asked the President of the Local Government Board whether his attention had been called to an inquest held at Camberwell on Tuesday, May 6th, on two aged persons of the Newington workhouse; whether he was aware that a nurse stated at the inquest that there was only one nurse at that institution to 112 aged persons; whether he was aware that the jury stated that there should be more nurses at that institution; and whether he would make inquires into the matter.—Mr. BURNS replied: I have seen a newspaper report of the inquest. I understand that the aged persons at this institution are not in a condition necessitating medical or nursing treatment, being able to wash, dress, and generally to look after themselves, and that the duties of the attendant entail no actual nursing. All cases that require skilled nursing are at once removed to the infirmary. I have, however, directed one of my medical inspectors to visit the workhouse and see whether the arrangements are satisfactory.

BOOKS, ETC., RECEIVED.

AMERICAN MEDICAL ASSOCIATION PRESS, 535, Dearborn-avenue, Chicago.

Transactions of the American Pediatric Society. Twenty-fourth Session. Held at the Homestead Hotel, Hot Springs, Virginia, May 29, 30, and 31, 1912. Edited by Linnæus Idford La Fetra, M.D. Price not stated.

ALLEN, GEORGE, AND CO., LIMITED, 44 and 45, Bathbone-place London, W.

The Philosophy of the Present in Germany. By Oswald Külpe, Professor of Philosophy in the University of Bonn. Translated from the Fifth German edition by Maud Lyall Patrick and G. T. W. Patrick. Authorised Translation. Price 3s. 6d. net.

"ARGUS" OFFICE, Shettleston, Glasgow.

The Sanitary Students' Sketch Book. By William Roy, Inspector of Drainage and Plumber Work, Glasgow Sanitary Department. Price 1s. net.

BAILLIÈRE, TINDALL, AND COX, London.

The "Nauheim" Treatment of Diseases of the Heart and Circulation. By Leslie Thorne Thorne, M.D., B.S. Durh., M.R.C.S. Eng., L.R.C.P. Lond. Fourth edition. Price 3s. 6d. net.

The Practice of Urology. A Surgical Treatise on Genito-Urinary Diseases, including Syphilis. By Charles H. Chetwood, M.D., LL.D., Professor of Genito-Urinary Surgery, New York Polyclinic. Price 21s. net.

Manual of Tropical Medicine. By Aldo Castellani, M.D. Florence, Privat-Docent (Naples), Director of the Clinique for Tropical Diseases, Ceylon, and Albert J. Chalmers, M.D. Vic. & Liv., F.R.C.S. Eng., D.P.H. Cam., Director, Wellcome Tropical Research Laboratories, Khartoum. Second edition. Price 21s. net.

BALE (JOHN), SONS, AND DANIELSSON, LIMITED, London.

Surgery of the Lung. By C. Garrè, Professor of Surgery at the University of Bonn; and H. Quincke, formerly Professor of Medicine at the University of Kiel. Second edition. Translated from the German by David M. Barcroft, M.D. Price 12s. 6d. net.

The Royal Dental Hospital of London. Annual Reports for 1912. Price 3s. net.

BARTH, JOHANN AMBROSIUS, Leipzig.

Lehrbuch der Röntgenkunde. Zwei Bände. I. Band. Unter Mitwirkung von Dr. A. Cieszynski, München, Priv.-Doz. Dr. H. Dietlen, Strassburg i.E., Priv.-Doz. Dr. M. Faulhaber, Würzburg, Prof. Dr. R. Grashey, München, Dr. C. Kaestle, München, Geh. Med.-Rat Prof. Dr. Fr. Kraus, Berlin, Prof. Dr. P. Krause, Bonn, Prof. Dr. Fr. Lange, München, und Dr. H. Weber, München. Herausgegeben von Dr. med. Hermann Rieder, K. Universitäts Professor in München, und Dr. phil. Josef Rosenthal Dipl.-Ing. in München. Price, paper, M.25; bound, M.26.

BLACK, ADAM AND CHARLES, London.

A Text-book of Midwifery. For Students and Practitioners. By R. W. Johnstone, M.A., M.D., F.R.C.S., M.R.C.P.E., Assistant to the Professor of Midwifery in the University of Edinburgh. Price 10s. 6d net.

Diseases and Injuries of the Eye. A Text-book for Students and Practitioners. By William George Sym, M.D., F.R.C.S.E., Ophthalmic Surgeon, Edinburgh Royal Infirmary, Lecturer on Diseases of the Eye in the University of Edinburgh. Price 7s. 6d. net.

BUTTERWORTH AND CO., Bell-yard, Temple Bar, London.

The Acts relating to the Income Tax. By the late Stephen Dowell, M.A. Seventh edition, revised, altered, and considerably enlarged. By John Edwin Piper, LL.B. Lond., of the Middle Temple, Barrister-at-Law, Assistant Solicitor of Inland Revenue. Price 22s. 6d. net.

CONSTABLE AND CO., LIMITED, London.

The Pathology of Growth. Edited by A. E. Boycott, B.Sc., M.A., M.D. Vol. I. Tumours. By Charles Powell White, M.D., F.R.C.S., Director, Pilkington Cancer Research Fund; Pathologist, Christie Hospital, Manchester. Price 10s. 6d. net.

Sex Antagonism. By Walter Heape, M.A., F.R.S. Price 7s. 6d. net.

ENCYCLOPÆDIA BRITANNICA COMPANY, LIMITED, 125, High Holborn, London, W.C. ENCYCLOPÆDIA BRITANNICA COMPANY, New York.

The Britannica Year-book, 1913. A Survey of the World's Progress since the Completion in 1910 of the Encyclopædia Britannica, eleventh edition. Edited by Hugh Chisholm, M.A. Oxon., Editor of the Encyclopædia Britannica. Price, cloth, 10s.

EUGENICS EDUCATION SOCIETY, Kingsway House, Kingsway, London, W.C.

Problems in Eugenics. Vol. II. Report of Proceedings of the First International Eugenics Congress held at the University of London, July 24th to 30th, 1912. Price 3s. 6d. net.

FISCHER, GUSTAV, Jena.

Ueber traumatische Entstehung innerer Krankheiten. Klinische Studien mit Berücksichtigung der Unfall-Begutachtung. Von weil. Dr. Richard Stern, a.o. Professor, Direktor der medizinischen Universitäts-Poliklinik und Primärarzt am Allerheiligen-Hospital zu Breslau. Zweite neu bearbeitete Auflage. Drittes Heft. Krankheiten der Bauchorgane, des Stoffwechsels und des Blutes. Bearbeitet von Dr. Julius Schmid, Privatdozent an der Universität und Primärarzt am Allerheiligen-Hospital zu Breslau. Price not stated.

Sammlung Anatomischer und Physiologischer Vorträge und Aufsätze. Herausgegeben von Professor Dr. E. Gaupp und Professor Dr. W. Trendelenburg. Heft 29. Die vergleichende Methode in der Experimentalphysiologie. Von Wilhelm Trendelenburg in Innsbruck. Price not stated.

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Vierunddreissigste Lieferung. Band I. Physiologie der Körpersäfte. Physiologie der Atmung. Zweite Hälfte. Seite 481–640. Price M.5.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Skin Diseases in General Practice, their Recognition and Treatment. By Haldin Davis, M.B., B.Ch., B.A. Oxon., F.R.C.S. Eng., M.R.C.P., Physician in Charge of the Skin Department, Paddington Green Children's Hospital. Price 15s. net.

Gout, its Etiology, Pathology, and Treatment. By James Lindsay, M.D. Edin., M.R.C.P. Lond., Hon. Physician, formerly Hon. Pathologist, and Resident Medical Officer, Royal Mineral Water Hospital, Bath. Price 5s. net.

HEINEMANN, WILLIAM, London.

Introductory Electricity and Magnetism. By Carl W. Hansel, B.Sc. (Hons.) Lond., Assistant Master at Bedford Grammar School and Lecturer on Electrical Engineering and Heat Engines in the Bedford Evening Institution. Price 2s. 6d. net.

HERMANN ET FILS, A., 6, Rue de la Sorbonne, Paris.

Questions Biologiques Actuelles. Collection de Monographies publiée sous la Direction de M. A. Dastre, Membre de l'Institut. La Sécrétion Pancréatique. Par Emile F. Terroine. Price Fr.5.

MACMILLAN AND CO., LIMITED, London.

Babies. A Book for Maternity Nurses. By Margaret French, Sister at the General Lying-in Hospital, York-road, Lambeth. Price 1s. net.

MILLS AND BOON, LIMITED, 49, Rupert-street, London, W.

About Baby. By Francis Tweddell, M.D., Alumnus, Bellevue Hospital, New York. British edition, revised and edited by W. Barkley, M.B., B.Ch. Price 1s. net.

MURRAY, JOHN, London.

The Reduction of Domestic Flies. By Edward Halford Ross, M.R.C.S. Eng., L.R.C.P. Lond. Price 5s. net.

Researches into Induced Cell Reproduction and Cancer, and Other Papers. Vol. III. By H. C. Ross, M.R.C.S. Eng., L.R.C.P. Lond.; J. W. Cropper, M.B., M.Sc. Liverp.; E. H. Ross, M.R.C.S. Eng., L.R.C.P. Lond.; H. Bayon, M.D. Genoa and Wurtzburg; W. J. Atkinson Butterfield, M.A., F.I.C.; R. Jennings, D.P.H. Cantab., M.R.C.S. Eng., Lieutenant-Colonel, I.M.S.; and S. R. Mowlgavkar, F.R.C.S. The John Howard McFadden Researches. Price 5s. net.

OLIVER AND BOYD, Edinburgh and London.

Food and Feeding in Health and Disease. A Manual of Practical Dietetics. By Chalmers Watson, M.D., F.R.C.P.E., Assistant Physician, Royal Infirmary, Edinburgh. Second edition, revised. Price 10s. 6d. net.

THACKER, SPINK, AND CO., Calcutta. THACKER AND CO., LIMITED, Bombay. HIGGINBOTHAM AND CO., Madras. W. THACKER AND CO., London.

Birch's Management and Medical Treatment of Children in India. Fifth edition. By C. R. M. Green, M.D., D.P.H., F.R.C.S. Eng., Surgeon to the Eden Hospital, Professor of Midwifery and Fellow of Calcutta University, Lieut.-Colonel, Indian Medical Service, and V. B. Green-Armytage, M.D., M.R.C.S., Resident Surgeon, Eden Hospital, Captain, Indian Medical Service. Price Rs.7.8.

UNIONE TIPOGRAFICO-EDITRICE TORINESE, Torino, Milano, Napoli, Palermo, Roma.

Professore Roncali. Trattato dei Neoplasmi Maligni. Flogosi e Carcinoma. 44-45ª Disp. (Pag. 289–352 del Volume II.) Price 2 lire.

Clinica Chirurgica della Regia Università di Torino. Direttore Prof. Sen. A. Carle. La Cura delle Ernie inguinali e crurali. Per il Dott. Prof. Andrea Marro, Docente di Clinica Chirurgica e di Medicina Operatorio. Price L.8.

WILSON, EFFINGHAM, 54, Threadneedle-street, London, E.C.

Leeming's Simple Ledger for the Tradesman. By F. B. Leeming, L.A.A. Price 1s. net.

The People's Money. A Brief Analysis of the Present Position in America, with some Observations on the World-Organisation of Labour. By John W. de Kay. Price 1s.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAM, JAMES R., M.B., Ch.B., D.P.H. Edin., has been appointed Assistant Tuberculosis Officer for Leith.

BALL, W. GIRLING, F.R.C.S. Eng., has been appointed Assistant Surgeon and Warden of the College at St. Bartholomew's Hospital.

BEAN, K. D., M.B., Ch.B. Vict., has been appointed Senior House Surgeon at the Manchester Royal Infirmary.

BRAND, Miss, M.B., B.S., has been appointed Clinical Assistant at the Royal Free Hospital.

BUCHAN, J. J., M.D. Glasg., D.P.H., has been appointed Medical Officer of Health of Bradford.

HEATHCOTE, HAROLD, M.B., Ch.B. Vict., has been appointed House Physician at the Manchester Royal Infirmary.

HEWSON, R. WARRENNE DALE, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Assistant Medical Officer to the Coton Hill Mental Hospital, Stafford.

HEYWOOD, W. B., M.D. Cantab., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Newbury District of the county of Berks.

MAIR, WILLIAM, M.D. Edin., D.P.H. Cantab., has been appointed Research Pathologist to the Metropolitan Asylums Board.

OLIVER, T. R., B.C. Cantab., M.B., Ch.B. Vict., has been appointed House Surgeon at the Manchester Royal Infirmary.

REYNOLDS, E. S., M.D. Lond., F.R.C.P. Lond., has been appointed to the chair of Clinical Medicine in the University of Manchester.

RIVERA, J. E., M.R.C.S., L.R.C.P., has been appointed House Physician at the Manchester Royal Infirmary.

STEWART, R. P., M.B., Ch.B. Vict., M.R.C.S., L.R.C.P. Lond., has been appointed Senior House Surgeon at the Manchester Royal Infirmary.

WHITEHOUSE, BECKWITH, M.S. Lond., F.R.C.S. Eng., has been appointed Examiner under the Central Midwives Board for the Birmingham centre.

WILLIS, H. D., L.M.S.S.A. Lond., has been appointed Junior House Surgeon at the Manchester Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House Surgeon and Secretary. Salary £150 per annum, with board and washing.

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £80 per annum, with board and residence.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Junior House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.

BIRKENHEAD UNION INFIRMARY AND WORKHOUSE.—Senior Resident Assistant Medical Officer. Salary £150 per annum, with board, apartments, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, &c.

BIRMINGHAM, QUEEN'S HOSPITAL.—Third Surgeon to Out-patients. Salary £50 per annum.

BIRMINGHAM UNIVERSITY.—Junior Demonstrator in Anatomy. Salary £150 per annum.

BOLTON INFIRMARY AND DISPENSARY.—Third House Surgeon. Salary £90 per annum, with apartments, board, and attendance.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

BRIGHTON COUNTY BOROUGH ASYLUM, Haywards Heath.—Locum Tenens Assistant Medical Officer for three months. Salary £4 4s. per week.

BRISTOL GENERAL HOSPITAL.—Second House Physician and Casualty House Surgeon, both for six months. Salary at rate of £80 per annum, with board, residence, &c.

BROMSGROVE, WORCESTERSHIRE ASYLUM.—Second Assistant Medical Officer. Salary £225 per annum, with quarters, board, washing, and attendance.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.

CALCUTTA, CORPORATION OF.—Health Officer. Monthly salary not less than Rs.1250 and not more than Rs.2000.

CANCER HOSPITAL, Fulham-road, S.W.—Physiological Chemist. Salary £350 per annum.

CANTERBURY BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, washing, and attendance.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—Resident Medical Officer, unmarried. Salary £90 per annum, with board, lodging, and washing.

CHELSEA HOSPITAL FOR WOMEN.—Anæsthetist. Salary £21 per annum. Also Clinical Assistants for three months.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, lodging, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry.—Senior House Surgeon, House Physician, and Junior House Surgeon. Salary of former £120 per annum, and of two latter £90 per annum, with residence, board, and laundry.

DENBIGH, NORTH WALES COUNTIES ASYLUM.—Medical Superintendent. Salary £500 per annum, with unfurnished house and other emoluments.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Assistant House Surgeon. Salary at rate of £60 per annum, with apartments, board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant House Surgeon, unmarried. Salary at rate of £75 per annum, with board and laundry. Also House Surgeon, unmarried. Salary £50 for first six months, and £75 for second six months.

DEWSBURY UNION WORKHOUSE.—Resident Assistant Medical Officer (female). Salary at rate of £100 per annum, with rations, apartments, washing, &c.

DORCHESTER, DORSET COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer to Casualty Department for six months. Salary at rate of £100 per annum, with luncheon and tea. Also House Physician for six months. Salary at rate of £75 per annum, with board, residence, laundry, &c. Also House Physician and Assistant Casualty Officer for six months. Salary at rate of £75 per annum, with board, residence, laundry, &c.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of 100 guineas per annum, with board, apartments, and washing.

EXMINSTER, DEVON COUNTY ASYLUM.—Third and Fourth Assistant Medical Officers. Salary £200 per annum, with board, laundry, and apartments.

GATESHEAD ASYLUM, Stannington, Northumberland.—Medical Superintendent. Salary £400 per annum, with house, fuel, light, laundry, &c.

GREENWICH, DREADNOUGHT HOSPITAL.—Assistant Surgeon.

HALIFAX, ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

HERTFORD COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum, with board, washing, and apartments.

HITCHIN, THREE COUNTIES ASYLUM.—Junior Assistant Medical Officer. Salary £170 per annum, with board, apartments, washing, and attendance.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—House Physician and House Surgeons, unmarried, for six months. Salary £30, with washing allowance, board, and residence.

INFECTIOUS HOSPITALS SERVICE OF THE METROPOLITAN ASYLUMS BOARD.—Junior Assistant Medical Officers, unmarried. Salary £180 per annum, with board, lodging, and washing.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—House Physician and Second House Surgeon. Salary £80 per annum each, with board, residence, and laundry.

ITALIAN HOSPITAL, Queen-square, W.C.—House Surgeon for six months. Salary £60 per annum, with board and residence.

KETTERING AND DISTRICT GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, &c.

LANCASHIRE COUNTY COUNCIL.—Tuberculosis Officers. Salary of one at £500, and two at £400 per annum.

LEICESTER CORPORATION TUBERCULOSIS DISPENSARY.—Assistant Medical Officer. Salary £250 per annum.

LICHFIELD, COUNTY MENTAL HOSPITAL, Burntwood.—Junior Assistant Medical Officer, unmarried. Salary £210 per annum, with apartments, board, and washing.

LINCOLN MENTAL HOSPITAL, The Lawn, Lincoln.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, &c.

LIVERPOOL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Mount Pleasant.—Honorary Assistant Physician.

LIVERPOOL, PARK HILL SANATORIUM.—Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with board, washing, and lodging.

LIVERPOOL STANLEY HOSPITAL.—Two House Physicians. Salary £75 per annum each, with board, residence, and laundry.

LONDON LOCK HOSPITAL.—Pathologist. Salary £50 per annum. FEMALE HOSPITAL: House Surgeon and Assistant House Surgeon. Salary £100 and £80 per annum respectively, with board, lodging, and washing. MALE HOSPITAL: House Surgeon. Salary £100 per annum, with board, lodging, and washing.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £120 per annum, with rooms, attendance, board, and washing.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Medical Officer in Charge of Electrical Department. Salary £52 10s. per annum.

MIDDLESEX HOSPITAL, W.—Lady Superintendent. Salary £150 per annum, with board and residence.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—House Physician for six months. Salary at rate of £100 per annum, with board, attendance, and laundry.

NESTING AND LUNNASTING PARISH COUNCIL.—Medical Officer. Salary £50 per annum.

NEW ZEALAND GOVERNMENT, TE WAIKATO SANATORIUM.—Medical Superintendent. Salary £500 per annum, with house, &c.

NORTHAMPTON COUNTY ASYLUM, Berry Wood, Northampton.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 per annum, with apartments, board, washing, and attendance, &c.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Casualty Officer and House Surgeon, unmarried, for six months. Salary £60 per annum, with board, lodging, and washing.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180, with apartments, attendance, light, and fuel.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Dental Surgeon for L.C.C. School—Dental Cases. Salary £200 per annum. Also House Physician and House Surgeon for six months. Salary at rate of £30 per annum, with board, residence, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Second House Surgeon. Salary £80 per annum, with apartments, board, and washing.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, residence, washing, &c.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £100 per annum, with board, lodging, and washing.

ROYAL EAR HOSPITAL, 42 and 43, Dean-street, London, W.—Clinical Assistants.

ROYAL EYE HOSPITAL, Southwark, S.E.—Junior House Surgeon for six months. Salary at rate of £50 per annum, with board and residence. Also Clinical Assistants.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Female Assistant to Clinical Pathologist. Salary £50 per annum.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Assistant House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £80 per annum, with board, lodging, and washing.

SHREWSBURY, COUNTY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £170 per annum, with board, apartments, laundry, &c.

SOUTHAMPTON, COUNTY BOROUGH OF.—Assistant Medical Officer of Health. Salary £200 per annum, with residence, board, and washing.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £80 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

SOUTHWARK UNION INFIRMARY, East Dulwich Grove, S.E.—Second Assistant Medical Officer. Salary £120 per annum, with board, lodging, and washing.

STIRLINGSHIRE EDUCATION COMMITTEE.—School Medical Inspector. Salary £300 per annum.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Resident Assistant Medical Officer (female). Salary £100 per annum, with apartments, board, washing, and attendance.

STOKE-UPON-TRENT UNION WORKHOUSE AND HOSPITAL, London-road, Newcastle, Staffs.—Assistant Resident Medical Officer, unmarried. Salary £130 per annum, with rations, apartments, and washing.

TAUNTON AND SOMERSET HOSPITAL.—Resident Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, lodging, and laundry.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with rooms, board, and washing.

WAKEFIELD GENERAL HOSPITAL.—Second House Surgeon, unmarried. Salary £100 per annum, with board, lodgings, and washing.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Dentist.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Resident House Physician for six months. Salary at rate of £75 per annum.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Junior House Physician. Salary at rate of £75 per annum, with board, residence, and washing.

WEST HAM MUNICIPAL TUBERCULOSIS DISPENSARY.—Tuberculosis Officer. Salary £500 per annum.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Physician for six months. Board, lodging, and laundry allowance provided.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £120 per annum, with board and residence.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Salary at rate of £100 per annum, with board, rooms, and laundry. Also House Surgeon. Salary £100 per annum, with board, rooms, and laundry.

WORCESTER GENERAL INFIRMARY.—House Physician. Salary £100 per annum, with board, residence, and washing.

YORK, NORTH RIDING ASYLUM, Clifton.—Second Assistant Medical Officer. Salary £150 per annum, with board, apartments, washing, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for Certifying Surgeon under the Factory and Workshop Acts at HOXNE, in the county of Suffolk.

BIRTHS.

ALEXANDER.—On May 24th, at Gatewick, Littlehampton, the wife of F. H. Alexander, M.B. Lond., of a daughter.

CROSS.—On May 22nd, at Cooper-street, Bolton (Lancs), the wife of H. C. D. Cross, M.D., B.Ch. Edin., late of Trinidad, B.W.I., of a daughter.

DEATHS.

STOCKEN.—On May 25th, at Onslow Villas, Muswell Hill, James Stocken, L.D.S., aged 84.

WYBORN.—On May 22nd, at Camden-road, London, N.W., Walter Edward Wyborn, M.R.C.S. Eng., L.R.C.P. Lond.

Notes, Short Comments, and Answers to Correspondents.

THE ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS: LORD CHEYLESMORE'S POSITION.

AT the annual meeting of the Royal Society for the Prevention of Cruelty to Animals, upon the name of Lord Cheylesmore being submitted for re-election to the council of the society, cries of "No! no!" called attention to the fact that there was a motion on the agenda paper that "the meeting considers the position held by Lord Cheylesmore on the Research Defence Society inconsistent with the position he holds in this society." A discussion, which included a speech by Mr. Stephen Coleridge, and a subsequent vote had as their result the rejection of Lord Cheylesmore as a member of the council, and the announcement was received with loud cheers on the part of some of those present. These no doubt regarded the effect of their action in the matter with satisfaction. To fairer-minded people it will seem deplorable that a body so useful and worthy of support should be divided and its strength and usefulness impaired for the gratification of a section of its members, even though at a general meeting that section was able to secure a majority. A vote declaring a member of the Research Defence Society unworthy of a place on the council of the Royal Society for the Prevention of Cruelty to Animals appears to imply that no member of the former society is fit to be a subscriber to the latter. Will the Royal Society for the Prevention of Cruelty to Animals accept no subscriptions from those who subscribe to the Research Defence Society, or who are ready to employ members of the medical profession who declare themselves in sympathy with its objects?

THE CRUISE OF THE MIDGE.

To the Editor of THE LANCET.

SIR,—The season of the midge has arrived again, and thousands of people have become aware of the irritating attacks of this pest which has suddenly been brought into actual being by the hot weather. The immunity which some persons enjoy from attacks or from subsequent severe urticarial troubles is exasperating, while it raises an interesting pathological point. The pleasure of sitting in the garden during the warm summer evenings is spoilt by the insidious attacks of these venomous creatures, and in so many instances the irritation and inflammation set up are of long duration. Are there any preventive or palliative measures that are well founded? I have heard that sponging the body with weak quassia infusion or the use of quassia chips in the bath wards off these relentless pests, and that the application of certain essential oils is useful—e.g., eucalyptus, cedar, birch-tar, while as anodynes are mentioned carbolic acid, camphor, subacetate of lead, and ammonium chloride. I should be most grateful for information on these points. I am, Sir, yours faithfully,

May 27th, 1913. A VICTIMISED CHEMIST.

AN ESSAY ON HENRY VIII.

IT is seldom that the reports of medical officers of health afford anything but serious food for thought, and we do not look in them for amusement. The other day we came, however, across one which not only presented public health in its usual serious aspects, but supplied also something in a lighter vein. The provincial health officer for Nova Scotia, in his report for 1912, in dealing with the need for teaching hygiene in the public schools, furnishes a short story which he says is quoted for a double purpose: firstly, to amuse the reader; and secondly, to suggest something to the school teacher. This is the story: "Jimmy bit his pencil and looked at the ceiling. His task was to write an essay on Henry VIII. The sharp voice of the teacher broke in upon his reverie. 'Two minutes more,' she snapped out. Jimmy had to write something; he set to work and evolved the following:—Henry VIII. was King of England and the greatest widower that ever was. He was born at a place called Annie Domino, and he had 350 wives. The first was beheaded and then executed, the second was revoked, and the third died, and then he married Ann Bulletin. ..... "

SEVERE DISCIPLINE IN A REMAND HOME.

AT the Hampstead police-court recently two little boys who were to be remanded for the second time upon a charge of picking pockets begged that they might not be sent back to the remand home. This would be one of the "places of detention" to which children or young persons are to be sent when remanded or committed for trial under Sections 97 and 108 of the Children Act, 1908, and which it is the duty of the police authority to provide for every petty sessional division. The chairman of the Hampstead bench naturally had his interest aroused by the unwillingness of the lads before him to return to an institution brought into existence expressly for the benefit of young offenders in an age more humane than that which imprisoned their forerunners in the ordinary gaol. "They treat you well there, do they not?" he inquired. "No, they don't, sir," replied one of the boys, melting into tears; "they make us clean our teeth!" We have not seen in what terms the magistrate commented upon this complaint of the discipline of the "place of detention" referred to, but hope that it took the form of congratulating the police authority. Under Section 108, Subsection 3, "before arranging for the use of any premises as aforesaid the police authority shall satisfy themselves of the fitness of the occupier thereof to have the custody and care of children or young persons." This had evidently been done.

A WARNING.

To the Editor of THE LANCET.

SIR,—We are informed by several medical men that a certain "John Williams" is calling upon them in North Wales and elsewhere, and obtaining orders for our publications and receiving money for the same.

We beg to notify members of the profession that the said "John Williams" is not, and never has been, employed by our firm, and has no authority to represent us or receive money on our behalf.

We are, Sir, yours faithfully,

J. & A. CHURCHILL.

Great Marlborough-street, London, W., May 22nd, 1913.

To the Editor of THE LANCET.

SIR,—The Oxford University Press desires to give notice to the profession that a man named John Williams is calling upon doctors in North Wales, Lancashire, and Cheshire districts soliciting orders for the Oxford Medical Publications, obtaining money and giving receipts in their name.

It is to be clearly understood that the man is acting absolutely without authority, and the Oxford University Press can accept no responsibility for orders placed with him. I am, Sir, yours faithfully,

HENRY FROWDE.

Oxford University Press, Amen Corner, London, E.C.

PARIS OPERA ON THE ELECTROPHONE.

WITH the coöperation of the British Postmaster-General and the French Minister of Posts and Telegraphs an electrophone connexion was made between the stage of the Paris Opera House and the Electrophone Salon at 36, Gerrard-street, London, W.C., on May 21st, while a similiar transmission was made from Covent Garden Opera and other London theatres to Paris. The conveyance of sound by submarine cables has been greatly improved recently, mainly by the introduction of "loading" coils at intervals throughout the length of the cable, and the combination of the delicately sensitive electrophone enables a musical performance to be heard over a distance of several hundred miles. The electrophone is mainly used for the transmission of music and songs from London theatres (and of sermons and Church services on Sundays) to subscribers within the London area, but recent improvements in telephonic transmission have much increased its range. The music from the Paris Opera was heard with great distinctness on the occasion of the exchange between the two capitals.

FAT IN INFANT FOODS.

To the Editor of THE LANCET.

SIR,—Complaint having been made to me by Messrs. Allen and Hanbury that the proportion of fat in their infant foods given in the last edition of my book on "Food and Dietetics" is too low, I have had a fresh analysis of these preparations made, and find that the percentage of fat in their No. 1 and 2 Foods should be 18·5 and 17·6 instead of 14·0 and 12·3 respectively as stated.

I am glad to have the opportunity of correcting this mistake, and of pointing out that the proportion of fat in the No. 1 Food *when mixed ready for use* is thus made practically the same as that in human milk. (See "Food and Dietetics," third edition, p. 470.)

I am, Sir, yours faithfully,

ROBERT HUTCHISON.

Queen Anne-street, Cavendish-square, W., May 22nd, 1913.

WANTED, A WITNESS.

To the Editor of THE LANCET.

SIR,—We are very desirous of getting into communication with a gentleman whom we have every reason to believe was a medical man who witnessed an accident at Lubenham Hill, near Market Harborough, Leicestershire, in October last year, when a clergyman sustained injuries by collision with a motor-car. The gentleman in question kindly attended to the injured clergyman, and then, at the request of the clergyman, kindly wired to his own medical attendant, a local practitioner. We are acting on behalf of the owner of the motor-car, and are desirous of getting at the true facts of the matter, and probably this gentleman, who was following in a two seated motor-car immediately behind the clergyman, would be able to judge the cause of the

accident. Unfortunately he omitted to put his name on the wire which he so kindly sent, and we have been quite unable to trace him. It occurs to us that if you would be so good as to insert this letter in your correspondence column it might meet the eye of the gentleman in question, and if so he would doubtless communicate with us on the matter. We are, Sir, yours faithfully,

BENNETT AND IRONSIDE.

6, Market-street, Leicester, May 22nd, 1913.

FROM an advertisement in the *Indian World* of April 21st, 1913:—

> It cures the malady more rapidly and with greater safety than any other known drugs or even surgical aid, which can not fail to be painful, however *skinful* the surgeon.

The italics are ours, but the allegation is the advertiser's.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—4.30 P.M., Dr. R. Broom: The Origin of Mammals. (Croonian Lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY.

SECTION OF OPHTHALMOLOGY (Hon. Secretaries—J. Herbert Parsons, Leslie Paton).

Annual General Meeting.—Election of Officers and Council for Session 1913-1914.

Cases (at 8 P.M.):

Mr. J. Cole Marshall: An Uncommon Type of Cataract in a Child.

Papers (at 8.30 P.M.):

Prof. Worthington, C.B., F.R.S. (introduced by Mr. J. H. Parsons): An Experimental Study of Normal Monocular Polyopia.

Dr. Freeland Fergus: (1) Glaucoma Associated with Venous Congestion; (2) (On behalf of Dr. J. R. Sutherland and Dr. W. G. Goudie) Case of Corneal Ulceration, the Discharge from which contained Fusiform Bacilli and Spirilla Resembling those Found in Vincent's Angina.

Mr. N. Bishop Harman: The Education of High Myopes: the Experience of Four Years.

Mr. G. H. Pooley: Case of Cyst of the Iris.

THURSDAY.

SECTION OF OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—W. W. H. Tate, T. W. Eden): at 8 P.M.

Short Communications:

Dr. Arnold Lea: Case of Puerperal Venous Thrombosis After a Normal Labour, associated with Toxæmia continuing for Two Months.

Mr. Corrie Keep: Two Cases of Solid Papilloma of Ovary.

Paper:

Dr. R. H. Paramore: Intra-abdominal Pressure in Pregnancy.

FRIDAY.

SECTION OF LARYNGOLOGY (Hon. Secretaries—Dan McKenzie, E. A. Peters): at 4.30 P.M.

Cases and Specimens, &c.:

Will be shown by Mr. Herbert Tilley, Mr. H. Lambert Lack, Dr. H. J. Davis, Dr. W. H. Kelson, Dr. W. Jobson Horne, Dr. J. Donelan, and others.

RÖNTGEN SOCIETY, King's College, Strand, W.C.

TUESDAY.—8.15 P.M., Annual Meeting. Papers:—Prof. C. G. Barkla: Reflexion of X Rays.—Dr. R. W. A. Salmond: Experiments on the Reflexion of X Rays.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's Hospital, Tottenham, N.

THURSDAY.—4.15 P.M., Election of Officers 1913-1914. Clinical Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. H. Davis: Clinique (Skin). 5.15 P.M., Lecture:—Dr. E. P. Cumberbatch: Ionic Medication.

TUESDAY.—4 P.M., Dr. P. Stewart: Clinique (Medical). 5.15 P.M., Lecture:—Dr. H. W. Wiltshire: Some Disorders of Liver Function.

WEDNESDAY.—4 P.M., Mr. G. E. Waugh: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. H. Mackenzie: Bronchiectasis and its Treatment.

THURSDAY.—4 P.M., Dr. G. Holmes: Clinique (Medical). 5.15 P.M., Lecture:—Sir G. Savage: Neuroses following Influenza.

FRIDAY.—4 P.M., Mr. J. G. French: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. Saunders: Rheumatic Fever in Children.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin. 5 P.M., Lecture:—Dr. Saunders: Rheumatic Fever in Children.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Mr. B. Harman: Injuries to the Eye.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. B. Harman: Injuries to the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Dr. Owen: Demonstration at Victoria Park Hospital. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin. 5 P.M., Lecture:—Mr. B. Harman: Injuries to the Eye.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat. 3.15 P.M., Special Lecture:—Sir Dyce Duckworth, Bart.: The Significance of Spontaneous Hæmorrhages.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.30 P.M., Lecture:—Sir James M. Davidson: The Detection of Calculus by Means of X Rays.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. Dr. A. Davies: Pathological Demonstration. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery. 2.15 P.M., Special Lecture:—Dr. F. Taylor: A Case of Hypernephroma.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Dr. C. O. Hawthorne: The Interpretation of Sphygmographic and Sphygmomanometric Records.

FRIDAY.—Out-patient Demonstrations;—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford; Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—10 A.M., Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

TUESDAY.—Clinic; 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST Brompton, S.W.

WEDNESDAY.—4.30 P.M., Lecture:—Dr. Inman: The Manufacture of Tuberculin. A complete Demonstration of the Methods of Manufacture and Testing Tuberculin will be given.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. J. Taylor.

FRIDAY.—3.30 P.M., Clinical Lecture:—Dr. A. Turner.

QUEEN'S HOSPITAL FOR CHILDREN, Board Room of the Hospital, Hackney-road, N.E.

TUESDAY.—4 P.M., Dr. S. Neave: Diagnosis in Respect of Certain Symptoms and Signs in Children.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), London Hospital, Mile End-road, E.

Course of Lectures on the Psychoses and Neuroses of Children :—

THURSDAY.—2 P.M., Dr. F. Warner: Development of Mental Action.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. J. L. Bunch: Some Tuberculous Diseases of the Skin and their Treatment

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY.—3 P.M., Prof. W. Bateson: The Heredity of Sex and Some Cognate Problems. (Lecture I.) 5 P.M., General Meeting.
WEDNESDAY.—3 P.M., Prof. W. Bateson: The Heredity of Sex and Some Cognate Problems. (Lecture II.)
FRIDAY.—9 P.M., Dr. F. Ward: Reflection and Refraction of Light as Concealing and Revealing Factors in Sub-aquatic Life.
SATURDAY.—3 P.M., Prof. E. Rutherford: Radioactivity—(3) The Radioactive State of the Earth and Atmosphere. (Tyndall Lectures.)

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Dr. E. B. Leech. (Post-Graduate Clinic.)

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.

MONDAY.—10 A.M., Obstetrical Lecture: Obstetrical Diagnosis. 11 A.M., Examination of Patients and Minor Operations.
TUESDAY.—10 A.M., Major Operations. 4 P.M., Class in Gynæcological Diagnosis.
WEDNESDAY.—10 A.M., Obstetrical Lecture: Obstetrical Diagnosis (continued). 11 A.M., Examination of Patients and Minor Operations.
THURSDAY.—10 A.M., Major Operations.
FRIDAY.—10 A.M., Gynæcological Lecture: Gynæcological Diagnosis. 11 A.M., Examination of Patients and Minor Operations. 4 P.M., Class in Gynæcological Diagnosis.

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced :—

April 26th–Nov. 5th (Ghent).—International Exhibition.
May 16th–31st (London, Holland Park Rink).—National Health Exhibition.
,, 22nd–June 7th (London, Olympia).—Royal Naval and Military Tournament.
,, 31st to October (London, Earl's Court).—Imperial Services Exhibition.
May–October (Leipzig).—First International Building Exhibition.
June 11th (opens) (London, Crystal Palace).—Anglo-German Exhibition.
,, 16th and 17th (Minneapolis).—Fifteenth Annual Meeting of the American Proctologic Society.
,, 17th–20th (Minneapolis).—American Medical Association.
,, 24th (opens) (London).—Historical Medical Museum. (Organised by Mr. Henry S. Wellcome.)
,, 24th–27th (London, Ontario).—Canadian Medical Association.
,, 26th–28th (Oxford).—Fourth Annual Conference of the British Hospitals Association.
,, 27th (London, Inns of Court Hotel).—Conference of the Pure Food and Health Society of Great Britain.
,, 30th and July 1st (London, Guildhall).—Conference on Diet, Cookery, and Hygiene in Elementary Schools and Institutions.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 28th, 1913.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 22	30·08	N.W.	...	113	63	48	49	54	Fine
,, 23	30·12	W.	...	119	71	54	55	58	Overcast
,, 24	30·28	W.	...	125	73	56	58	61	Fine
,, 25	30·32	W.	...	124	80	58	63	69	Fine
,, 26	30·22	S.	...	130	83	58	64	70	Fine
,, 27	30·07	S.W.	...	125	82	64	64	70	Fine
,, 28	30·11	S.W.	...	128	81	59	58	68	Cloudy

The following journals, magazines, &c., have been received:—Medical Chronicle, Life and Health, Journal of Pathology and Bacteriology, St. Thomas's Hospital Gazette, Middlesex Hospital Journal, Bulletin de la Société de l'Internat des Hôpitaux de Paris, Baily's Magazine of Sports and Pastimes, Clinical Excerpts, Hospital Assistant (India), Office International d'Hygiène Publique, Schmidt's Jahrbücher, Medical Bulletin, Homœopathic Recorder, Interstate Medical Journal, Post-Graduate (New York), Medical Review of Reviews, &c.

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